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Supreme Court, U.S.
FILED

10-491 OCT 8 2010

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In the

Supreme Court of the United States

L-3 COMMUNICATIONS CORP. AND
LOCKHEED MARTIN CORP.,
Petitioners

v.

HONEYWELL INTERNATIONAL INC. AND
HONEYWELL INTELLECTUAL PROPERTIES INC.,
Respondents

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

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October 8, 2010

QUESTIONS PRESENTED

1. Whether every element of a patent claim must have been previously disclosed in the prior art for the claim to be considered obvious, and thus unpatentable, under 35 U.S.C. § 103(a).

2. Whether petitioners must prove their obviousness defense by clear and convincing evidence.

PARTIES TO THE PROCEEDING AND RULE 29.6 STATEMENT

Honeywell International Inc. and Honeywell Intellectual Properties Inc. (collectively "Honeywell") are the plaintiffs in this action. The defendants are the United States of America, L-3 Communications Corporation ("L-3"), and Lockheed Martin Corporation.

L-3 Communications Holdings, Inc. owns 100% of L-3's stock. Lockheed Martin has no parent companies. State Street Financial Center owns 10% or more of Lockheed Martin's stock.

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OPINIONS BELOW

The opinion of the court of appeals (App. 1-36) is reported at 609 F.3d 1292. The opinion of the Court of Federal Claims (App. 42-221) is reported at 81 Fed. Cl. 514.

JURISDICTION

The court of appeals revised its opinion on May 25, 2010, App. 222-24, and denied petitions for rehearing en banc on June 10, 2010, *id.* at 225-27. The Chief Justice extended the time within which to file a petition for a writ of certiorari to and including October 8, 2010. This Court has jurisdiction under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

Section 103(a) of the Patent Act, 35 U.S.C. § 103(a), provides in relevant part:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Section 282 of the Patent Act, 35 U.S.C. § 282, provides in pertinent part:

> A patent shall be presumed valid. . . . The burden of establishing invalidity of a patent or

any claim thereof shall rest on the party asserting such invalidity.

INTRODUCTION

This petition presents two of the most important questions in patent law today: the meaning of this Court's decision in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 427 (2007), and whether a party challenging a patent's validity must prove invalidity by clear and convincing evidence.

In *KSR*, this Court rejected an inflexible bright-line rule under which the Federal Circuit considered an invention to be obvious, and thus unpatentable, only if prior art references contained an explicit teaching, suggestion, or motivation for combining various elements into the claimed invention. This Court held that, in determining obviousness, a court "need not seek out precise teachings" in the prior art. *KSR*, 550 U.S. at 418. Instead, the inquiry is an "expansive and flexible" one that "take[s] account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 415, 418. That full inquiry into obviousness is essential because, as this Court explained, "[g]ranting patent protection to advances that would occur in the ordinary course without real innovation retards" the very progress the patent system is supposed to promote. *Id.* at 419.

In this and other cases, however, divided panels of the Federal Circuit have responded by holding that, even if a teaching, suggestion or motivation for *combining* elements need not be

found in prior art references, each of those *elements* must nonetheless have been disclosed in the prior art. The Federal Circuit's effort to replace one bright-line rule with another, contrary to *KSR's* clear rejection of all such bright-line rules, warrants this Court's immediate review; indeed, it provides a basis for summary reversal.

The Federal Circuit also erred by relying on its longstanding rule that a party challenging a patent's validity must prove invalidity by clear and convincing evidence. In civil litigation, a preponderance of the evidence is the default burden of proof. Because the Federal Circuit's clear-and-convincing-evidence requirement departs from that general principle of law without any basis in the text of the Patent Act, this Court should grant review, as it has in the past, to re-affirm that the same general principles of law that apply in all other contexts also apply in patent cases. The exceptional importance of the Federal Circuit's imposition of a heightened burden of proof for all invalidity challenges is confirmed by the 11 amicus briefs filed by 22 companies, 36 professors, and multiple associations and organizations in support of Microsoft Corp.'s recent petition for a writ of certiorari on this issue. *See Microsoft Corp. v. i4i Ltd. P'ship, et al.*, No. 10-290 (U.S. Aug. 27, 2010). This case provides an excellent vehicle for showing the lower courts how to conduct a proper obviousness analysis, free of arbitrary bright-line rules and unfairly elevated burdens of proof.

STATEMENT OF THE CASE

A. The Night-Vision Technology at Issue

This case concerns color filters used on night vision goggles ("NVGs") and cockpit displays in military aircraft. In the 1970s, the United States military began using NVG technology for infantry ground forces. The early systems amplified ambient light throughout the visible spectrum of colors. *See* App. 3; *Honeywell Int'l, Inc. v. United States*, 66 Fed. Cl. 400, 406-07 (2005).

In the 1970s and early 1980s, military pilots (particularly helicopter pilots) became interested in using NVGs. The goggles developed for ground forces, however, could not simply be placed in a cockpit. NVGs amplified light to such an extent that even a small amount of light from a cockpit display could overwhelm the goggles and render them useless for viewing anything outside the aircraft. On the other hand, pilots needed lighted displays and instruments to control the aircraft. *See* App. 3-4, 50-51, 87, 173.

In the early 1980s, engineers solved this problem through a system of complementary filtering that placed a light filter over cockpit displays to allow only certain wavelengths of light through, and placed another light filter over NVGs to allow only a *different* set of wavelengths through. Because the wavelengths of light that the displays emitted in the cockpit were screened out by the filters on the NVGs, they did not overwhelm the goggles. Instead, the NVGs provided night vision

by amplifying all *other* wavelengths of light. *See generally* App. 4-5, 147-48, 168-73.

The two filters effectively split the color spectrum so that pilots could look straight ahead through the filtered NVGs to see the terrain outside of the aircraft, or look down underneath the goggles to see the filtered cockpit instruments and displays. *See* App. 3-4, 6. In general, the filter on the cockpit display allowed shorter wavelengths of light (e.g., bluer wavelengths) to pass and blocked longer wavelengths of light (e.g., redder wavelengths). The filter on the NVG did the opposite. *Id.* at 4-7.

The effectiveness of NVGs depends, however, on how much ambient light is allowed into the goggle. Thus, there is an inevitable trade-off between NVG performance and cockpit lighting: if more wavelengths of light are filtered out by the NVGs, more colors are available for cockpit displays, but night-vision performance decreases. Conversely, if fewer wavelengths of light are filtered out by the NVGs, night-vision performance improves, but fewer colors are available for cockpit displays. App. 32-33, 168-74.

In the early 1980s, helicopter pilots wanted some color differences in their displays to help them quickly identify alarms and warning lights, but they also needed maximum performance from NVGs to help them avoid trees and other terrain. *See* App. 50-51, 149-50, 168-72; C.A. App. 400364. After considering pilots' preferences and other factors such as the ability of enemy forces to see a red-illuminated cockpit more easily than a blue-

green cockpit, the military struck the balance by splitting the color spectrum at approximately 625 nm. App. 32-33, 161-62, 168-73. That meant, among other things, that red would not be used in the cockpit. *Id.* at 168-72. The military formalized its choice in 1986 by issuing a specification, known as MIL-L 85762, that told its suppliers how to build the chosen system. *Id.*

Interest in NVG technology soon spread from helicopter pilots to fixed-wing pilots, but fixed-wing pilots had somewhat different needs. App. 32-33, 171-72. Because they flew at higher speeds, they had less time to react to alarms and therefore relied more heavily on different display colors to help them differentiate and react more quickly to critical alarms. *Id.* at 171. Fixed-wing pilots also did not ordinarily fly as close to the ground as helicopter pilots, and were therefore willing to sacrifice some NVG performance to get more color in the cockpit. C.A. App. 400364. To accommodate fixed-wing pilots, the military created a new specification that issued in 1988 as MIL-L 85762A. App. 32-33, 171-72. That specification shifted the splitting point upwards from 625 nm to 665 nm—a wavelength that falls within the red portion of the color spectrum. *Id.* at 33, 171-72. The new specification essentially split the red color band in order to permit the use of some red wavelengths in the cockpit while reserving other red wavelengths for NVGs. *Id.* at 171-72.

B. The Asserted Patent

Allied Signal, Inc. (the predecessor to Honeywell by merger) filed the original application

for U.S. Patent No. 6,467,914 ("the '914 patent") on October 10, 1985—after the military announced its initial standard for helicopters, but shortly before it finalized the subsequent standard to accommodate fixed-wing aircraft. *See* App. 5. Allied Signal's application described a display system using separate green, blue, and red light sources that combined to make a full color image. *Id.* at 6-7. The application also disclosed a complementary filter that would block those emissions from the NVGs. *Id.* Thus, the application contemplated the use of red, green, and blue in the cockpit. *Id.*

In 1987, the military placed the application under a secrecy order that it lifted in 2000. App. 5-6. The '914 patent issued on October 22, 2002. *Id.* at 51.

C. The Court of Federal Claims Proceedings

Pursuant to 28 U.S.C. § 1498(a), Honeywell sued the United States in the Court of Federal Claims ("CFC"). *See* App. 7. Honeywell alleged that virtually all of the United States' modern military aircraft infringed the '914 patent. The court proceeded with a test case of three displays manufactured for F-16 and C-130 aircraft. *Id.* at 7-8. Lockheed Martin (manufacturer of the C-130) and L-3 (manufacturer of displays for the C-130) intervened because of their indemnification obligations. *Id.* at 8 n.1.

The CFC found that the government infringed claim 2 of the patent. App. 8. After holding a separate trial on the validity of claim 2, the CFC determined that, under this Court's decision in

KSR, the claim is invalid for obviousness pursuant to 35 U.S.C. § 103. App. 8. That claim recites:

> 2. A display system for use in association with a light amplifying passive night vision aid and a local color display including a local source of light having blue, red, and green color bands, comprising:
>
> (a) a plurality of filters at the local color display including
>
> (1) a first filter for filtering the blue color band of the local source of light;
>
> (2) a second filter for filtering the green color band of the local source of light; and
>
> (3) *a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band;* and
>
> (b) a fourth filter which filters light at the night vision aid, said fourth filter cooperating with said plurality of filters to substantially block at least said narrowband of the red color band from being admitted to the night vision aid.

Id. at 9-10 (emphasis added). Element (a)(3), a filter for splitting the red color band, is the element at issue here.

Based on an extensive review of multiple prior art references and the testimony of numerous experts and engineers, the CFC found that all of the elements of the claim were disclosed in prior art references and that it would have been obvious to

one skilled in the art to combine those references. App. 53-54 n.7, 57-60, 134, 165.

The CFC also emphasized that, "even if prior art did not disclose all the elements, the court could still determine that the '914 patent was obvious." App. 134. The court explained that "the obviousness inquiry 'requires a series of factual assessments culminating in an often-difficult qualitative judgment of the creative achievement involved in the invention.'" *Id.* at 133. "Therefore, the court also must examine the claimed invention 'as a whole,' through the eyes of 'a person having ordinary skill in the art.'" *Id.* The CFC found that such a person "'would be knowledgeable about night vision compatible aids, compatible instrument and panel lighting, and manufacturing displays for military cockpits.'" *Id.* at 107.

The CFC then determined that, "[a]ssuming, *arguendo*, that [prior art references] did not disclose how to 'split the red color band,'" the claimed invention was nonetheless obvious. App. 157-65. The CFC found that the reason no one had previously split the red color band for this purpose, at least in published literature, is that the military had not previously wanted to use red light in cockpits equipped with night vision technology. *Id.* at 160-64, 168-73. The military's subsequent "decision to use NVGs in fixed-wing aircraft created a market that would incentivize one of ordinary skill in the art to use complementary filtering to filter the red color band." *Id.* at 164-65.

The CFC emphasized that there was no dispute that, "after one skilled in the art, in 1985, identified

the need to split the red color band, determining the appropriate filters to use also would be known." App. 157. The prior art disclosed means of splitting the color band in order to filter light, and Honeywell and its expert conceded that "[t]here was nothing different about filtering the red color band, as opposed to other color bands." *Id.* at 151. Thus, the court found that even if no prior-art reference specifically disclosed splitting the *red* color band, as opposed to the color spectrum generally, a person skilled in the art would have known how to apply existing filtering technology to red. *Id.* at 134, 157-65. The CFC concluded that, because the means of splitting the red color band were known in the art, and the military's changing requirements, not some spark of innovation, prompted the decision to split the red color band, the patent claim was obvious. *Id.* at 157-65, 168-74.

D. The Federal Circuit Proceedings

In a split decision, the Federal Circuit reversed and held that claim 2 was not obvious because the prior art references did not disclose claim element (a)(3). App. 14-18. The majority construed that element to require the filtering of light in the cockpit that is perceptible as being red. *Id.* at 13-14. In the court of appeals' view, some of the cited prior art references disclosed filtering light within the red color band, but did not expressly describe the emitted color as being perceptible as red. *Id.* at 14-18. Invoking a heightened burden of proof, the court then concluded that, "[g]iven the failure to prove that the cited references disclose element (a)(3), the government has failed to carry its burden

of proving by clear and convincing evidence that the claimed limitation would have been obvious to one of skill in the art." *Id.* at 18.

The Federal Circuit majority stopped its obviousness analysis there. App. 18. It did not go on to consider the CFC's alternative findings that, even if the prior art did not disclose the relevant claim element, splitting the red color band was nonetheless obvious in light of market demands and the knowledge of persons skilled in the art. *Id.* at 18, 32-33. Instead, it treated the absence of the element in the prior art as a bright-line rule precluding a determination of obviousness. After considering some other, unrelated issues, the court remanded for the CFC to assess damages. *Id.* at 26.

Judge Mayer dissented. App. 27. After disagreeing with the majority's finding that one of the claim elements was not disclosed in the prior art, Judge Mayer stated that, "[i]n any case, testimony by experts for both Honeywell and the government indicates that one of skill in the art at the time would have known how to adjust the light source to increase the perceptibility of the light in the red color band." *Id.* at 31.

Judge Mayer emphasized that, under this Court's decision in *KSR*, "'[t]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.'" App. 32 (quoting *KSR*, 550 U.S. at 418). In this case, he explained, "[t]he change in

the military specification reflected a desire on the part of some military pilots, particularly those of fixed-wing aircraft, to sacrifice some amount of NVG sensitivity in exchange for allowing more red light to be displayed in the cockpit." *Id.* "This was a simple shift, changing the cutoff point for the red light that could be displayed (and was therefore blocked by the NVGs) from 625 nm to 665 nm, a shift that was well within the technical ability of those of ordinary skill in the art at the time." *Id.* at 32-33.

The panel denied rehearing after modifying its opinion to permit the defendants to raise on remand an unrelated defense under the Invention Secrecy Act to the award of damages for infringement before (though not after) the issuance of the patent. App. 222-23. The Federal Circuit denied rehearing en banc. *Id.* at 225-26.

REASONS FOR GRANTING THE PETITION

Over a vigorous dissent, the Federal Circuit relied on an obviousness test that directly conflicts with *KSR* and an elevated burden of proof that cannot be squared with traditional principles of law that apply in patent cases just as they apply in all other cases. Those important legal errors warrant this Court's review.

I. THE FEDERAL CIRCUIT'S DEPARTURE FROM *KSR* WARRANTS THIS COURT'S REVIEW.

The Federal Circuit's imposition of a bright-line rule requiring specific teachings in the prior art, as a condition for finding a patent claim to be obvious, conflicts with this Court's rejection of

precisely such rules in *KSR*. And the question is exceptionally important for essentially the same reasons that *KSR* warranted this Court's review.

A. The Federal Circuit's Decision Conflicts With This Court's Decisions.

Congress specified that a patent is invalid if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which such subject matter pertains." 35 U.S.C. § 103(a). The plain language of that statute focuses on whether, notwithstanding "the differences" between a patent claim and the prior art, the claim "as a whole" would have been obvious to a person with ordinary skill in the art. *See id.*

1. In keeping with that statutory text, this Court has instructed courts for almost half a century to consider three factors in determining obviousness: "the scope and content of the prior art," the "differences between the prior art and the claims at issue," and "the level of ordinary skill in the pertinent art." *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). This Court called for courts to apply that multi-factor test through "case-by-case development." *Id.* at 18.

Over time, however, the Federal Circuit came to apply a rigid test that asked whether the prior art contained an explicit "teaching, suggestion, or motivation" for combining the various elements of a patent claim. *See KSR*, 550 U.S. at 414 (quotations

omitted). In *KSR*, this Court responded by unanimously "rejecting the rigid approach of the Court of Appeals" and holding that bright-line rules that seek "precise teachings" in the prior art have no basis in the statutory text and no place in the obviousness analysis. *Id.* at 415, 418.

The Court explained that, "[t]hroughout this Court's engagement with the question of obviousness, our cases have set forth an expansive and flexible approach." *KSR*, 550 U.S. at 415; *see also id.* ("*Graham* set forth a broad inquiry."). Thus, *KSR* repeatedly held that "rigid and mandatory formulas" are "incompatible with our precedents." *Id.* at 419. "Rigid preventative rules that deny factfinders recourse to common sense . . . are neither necessary under our case law nor consistent with it." *Id.* at 421. "[W]hen a court transforms the general principle into a rigid rule that limits the obviousness inquiry . . . it errs." *Id.* at 419; *see also id.* at 428.

In addition to repeatedly rejecting *all* bright-line rules, *KSR* emphasized that bright-line rules limiting the obviousness inquiry to "precise teachings" in prior art references are *especially* contrary to the statutory text and this Court's precedents: "As our precedents make clear . . . the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418. "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *Id.* at 421. And "[i]n many fields it may be that

there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends." *Id.* at 419. For all of those reasons, after *KSR*, it is clear that there is no requirement of any specific teaching in the prior art, be it a teaching concerning a claim element or a portion of a claim element (as in this case), or the motivation to combine different elements into an overall invention (as in *KSR*).

The Patent and Trademark Office ("PTO") had little trouble drawing that conclusion from *KSR*. Before *KSR*, the PTO's Manual of Patent Examining Procedure ("MPEP") contained a section entitled, "All Claim Limitations Must Be Taught Or Suggested." MPEP § 2143.03 (2006 ed.). As its title reflected, that section stated that, "[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *Id.* Following *KSR*, however, the PTO struck that requirement from the MPEP, and revised the title of the relevant section to state only that "All Claim Limitations Must be *Considered*." MPEP § 2143.03 (2007 ed.) (emphasis added).

In contrast to the MPEP, the Federal Circuit's decision in this case conflicts with *KSR*. The court of appeals surveyed the cited prior art evidence and declared: "Given the failure to prove that the cited references disclose element (a)(3), the government has failed to carry its burden of proving by clear and convincing evidence that the claimed limitation would have been obvious to one of skill in the art." App. 18. That ended the court's obviousness

analysis. The Federal Circuit did not go on to consider whether, notwithstanding that difference between the patent claim and the prior art, the claim was nonetheless obvious in light of the ordinary knowledge and creativity of a person skilled in the art, market demands, or other considerations. *See generally id.* Nor did the Federal Circuit purport to overrule the CFC's fact-findings on those questions—findings that are entitled to deference under the clear-error standard of review. *See id.* at 10; *Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1160 (Fed. Cir. 2007). Thus, the Federal Circuit's truncated analysis cannot be squared with this Court's holding that the statutorily-mandated inquiry is a broad and flexible one governed by the *Graham* factors, not by rigid rules.

2. Even before *KSR*, the Federal Circuit's decision would have conflicted with this Court's decisions embracing a more flexible approach. In *Hollister v. Benedict & Burnham Manufacturing Co.*, 113 U.S. 59 (1885), for example, this Court held that a patent on a revenue stamp was invalid. The patented stamp combined three elements: a stamp; a stub with a serial number that could be detached from the stamp; and a portion of the stamp that contained the same serial number and that could be torn off and retained, but whose removal would mutilate the stamp. *Id.* at 70. This Court determined that the first two elements were "well known" and that, although the latter feature was "new in the sense that it had not been anticipated by any previous invention," the stamp was nonetheless unpatentable. *Id.* at 70, 71. The

new element was "but the display of the expected skill of the calling, and involves only the exercise of the ordinary faculties of reasoning upon the materials supplied by a special knowledge." *Id.* at 73.

By holding the patent invalid even though one of its elements was not disclosed in the prior art, *Hollister*, like *KSR*, makes clear that each element need not be so disclosed. Instead, the invention may be obvious in light of the ordinary creativity of a person skilled in the art.

3. The Federal Circuit further departed from this Court's precedents by treating the missing element as being a filter that split the perceptible red color band. *See* App. 13-14, 16-17. That is not so much a "missing element" as it is the combination of two elements that were both found in the prior art: a filter capable of splitting the red color band, and the emission of perceptible red light. There is no question that the prior art included filters capable of splitting the red color band. *Id.* at 150-51, 157-59. The CFC found and Honeywell's expert admitted that such filters were well known, and that "there's not[h]ing scientifically different about filtering a portion of the red color band from, for example, a portion of the blue color band." *Id.* at 151 (quotations omitted). Nor is there any doubt that the emission of perceptible red light from consoles was well known long before 1985. *See, e.g.*, *id.* at 3-7, 109-15. Indeed, red light has been known for most if not all of human history.

In effect, therefore, the Federal Circuit resurrected the teaching, suggestion, or motivation test this Court rejected in *KSR* in an even more demanding form—searching not just for a motivation to combine two aspects of the prior art, but for an explicit reference that actually combined them.

The Federal Circuit's analysis conflicts not just with *KSR* and *Hollister*, but also with this Court's decision in *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976). There, the court of appeals had held that a patent was non-obvious because an "element" was missing in the prior art; specifically, "the element lacking in the prior art was any evidence of an arrangement of the old elements" to produce the relevant result. *Id.* at 281-82. This Court made quick work of that analysis, explaining that a new arrangement or combination of previously known components need not be expressly set forth in the prior art. *Id.* at 282 (citing cases). And calling the combination an "element" did not affect that conclusion. There is no reason for a different result here.

B. The Question Is Exceptionally Important.

This Court's unanimous holdings in *KSR*, *Graham*, *Hollister*, and *Sakraida* are not only binding precedent, they are essential to the balance struck by the Patent Act. The Federal Circuit's continued desire to restrain the obviousness inquiry warrants this Court's review for essentially the same reasons it warranted review in *KSR*.

Those who genuinely innovate and disclose their inventions are entitled, in return, to monopoly patent rights. But as this Court has explained, the public interest lies in a *balanced* patent system that rewards genuine innovation without counter-productively impeding innovation by granting exclusive rights to applicants that do not deserve them. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989). Because invalid patents "stifle, rather than promote, the progress of useful arts," *KSR*, 550 U.S. at 427, "the strong federal policy favor[s] free competition in ideas which do not merit patent protection." *Lear, Inc. v. Adkins*, 395 U.S. 653, 656 (1969).

"Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress." *KSR*, 550 U.S. at 419. When an advance over the prior art is within the ordinary creativity of a person skilled in the art, it does not sufficiently add to the storehouse of human knowledge to warrant an exclusive, monopoly-like property right. Such advances may reflect good ideas and the work of a "skillful mechanic," but are not "'the things which are worth to the public the embarrassment of an exclusive patent.'" *Graham*, 383 U.S. at 10-11 (quoting Thomas Jefferson). No one can have a monopoly on ordinary skill.

C. The Federal Circuit's Decision Adds To The Uncertainty Concerning Obviousness Standards Following *KSR*.

Although most Federal Circuit panels after *KSR* have applied the missing-element test the panel applied here, at least one panel of that court has not. The Federal Circuit's decisions, and its denial of *en banc* review in this case, show that the missing-element test is not an anomaly, but an aspect of Federal Circuit jurisprudence that warrants this Court's attention. Only this Court can provide both the correction and the uniformity that this issue requires.

1. As in this case, a split panel of the Federal Circuit held in *Kinetic Concepts, Inc. v. Blue Sky Medical Group, Inc.*, 554 F.3d 1010 (Fed. Cir. 2009), that a claimed invention was non-obvious because the cited prior art references did not "teach or suggest" one of the claim limitations. *Id.* at 1020. The Federal Circuit recognized that the jury instruction on obviousness was erroneous because it required, contrary to *KSR*, that the prior art contain a teaching, suggestion, or motivation. *Id.* at 1021. But the court held that the erroneous instruction was harmless because there was substantial evidence that none of the prior art references disclosed one of the claim limitations:

> [Plaintiff] addressed each of Defendants' prior art references and provided the jury with a basis for determining that they did not teach or suggest "treating a wound with negative pressure," a limitation found in every asserted

> claim. We conclude this was sufficient to support the jury's verdict of nonobviousness.

Id. at 1020; *accord id.* at 1021. The unusual posture of that case—affirmance of a verdict rendered by an improperly instructed jury—makes clear that the Federal Circuit is applying the missing-element test as a bright-line rule.

Callaway Golf Co. v. Acushnet Co., 576 F.3d 1331 (Fed. Cir. 2009), committed the same error and showed exactly how dependent the Federal Circuit's missing-element test is on the characterization of the elements. The Federal Circuit held that the claimed invention—a three-piece golf ball—was not obvious because "[t]he evidence before the jury did not compel a finding that all claim limitations were present in the prior art." *Id.* at 1339.

The defendant had argued that the claimed golf ball was "nothing more than a predictable and 'obvious to try' variation of known elements (solid cores, ionomer-blend covers, and three-piece balls)." *Callaway*, 576 F.3d at 1339. The plaintiff, in contrast, argued that its golf ball "'produce[s] a synergy and an important new result' over and beyond that which could be expected independently from each prior art element." *Id.* Framed properly, therefore, the question was whether the specific combination was obvious. Instead, the Federal Circuit held that the golf ball was not obvious because the prior art did not "expressly disclose[] the requisite hardness limitation for a polyurethane golf-ball cover on a three-piece ball." *Id.* As in this case, the Federal Circuit thereby

defined the relevant "element" to be the combination of multiple different aspects of the patent claim, and then held that the claim was non-obvious because the prior art did not expressly disclose that *combination*.

In *Abbott Laboratories v. Sandoz*, 544 F.3d 1341 (Fed. Cir. 2008), the district court similarly held that a patent was non-obvious based on "the requirement that each and every claim limitation be found present in the combination of the prior art references before the [obviousness] analysis proceeds." *Id.* at 1351 (quoting *Abbott Labs. v. Sandoz, Inc.*, 500 F. Supp. 2d 846, 852 (N.D. Ill. 2007)). A split panel of the Federal Circuit affirmed the district court's determination of non-obviousness. While the majority was vague about the relevance of that legal standard to its disposition of the case, the majority did not dispute the dissent's view that it had endorsed the missing-element test applied by the district court. *See id.* at 1377 (Gajarsa, J., dissenting).

Judge Gajarsa chastised the majority for approving that test: "[I]t was clearly error to find, as a matter of law, that since none of the prior art references cited by [the defendant] explicitly disclosed a composition that had the . . . limitations of the '718 patent, it had failed to demonstrate 'the presence of all claim limitations in the prior art,' and therefore . . . the '718 invention could not be obvious." *Abbott Labs.*, 544 F.3d at 1377 (Gajarsa, J., dissenting). "Contrary to the majority, this holding relies on an improperly limited view of what types of references can be combined to show obviousness and an impermissibly cramped view of

the Supreme Court's holding in *KSR*." *Id.*; *see also id.* at 1378 n.5.

The Federal Circuit's decisions after *KSR* have led at least one commenter to conclude that the court "has traded one rigid test for another. Instead of requiring a teaching, suggestion, or motivation to combine the prior art references in order to find an invention obvious, the Federal Circuit now looks to whether reasonably pertinent art contains all of the elements of the invention." Nicholas Angelocci, *KSR v. Teleflex: Obvious Ambiguity*, 18 DePaul J. Art Tech. & Intell. Prop. L. 293, 320 (Spring 2008). And that is not a one-way street; overemphasis on whether the elements were set forth in the prior art, as opposed to whether the invention as a whole was obvious, could disadvantage a patent applicant when the innovative aspect consists in the combination of known elements. *Id.* at 320-21. In any event, "[t]his is surely not the flexible approach the Supreme Court desired after [its] decision in *KSR*." *Id.* at 321.

2. At least one early post-*KSR* panel of the Federal Circuit followed the correct approach. In *Leapfrog*, the Federal Circuit held that a patent claim was obvious even though one of its elements, a "reader," was not disclosed in the prior art references. 485 F.3d at 1162. The court upheld the trial court's obviousness determination based on that court's factual finding that readers were known to persons skilled in the art—exactly what it should have done here. *Id.*; *see also Media Techs. Licensing, LLC v. The Upper Deck Co.*, 596 F.3d 1334, 1337 (Fed. Cir. 2010) (holding, by a 2-1

majority, that a particular type of sports memorabilia card was obvious even though "no reference teaches a 'sports trading card,'" as required by the asserted claims).

To the extent that the Federal Circuit does not invariably apply the missing-element test, that only makes matters worse. The test was applied here and it clearly conflicts with *KSR* and a host of earlier decisions of this Court. To the extent that the missing-element test is occasionally missing from a panel decision, that simply means that the Federal Circuit is not only generally misapplying this Court's precedent, it is also failing in its mission to provide uniformity in patent law. The denial of en banc review here makes clear that the Federal Circuit will not fix this problem itself. This Court's intervention is needed.

D. This Case Provides A Good Vehicle For Correcting The Federal Circuit.

This case presents an unusually good vehicle for considering this question. Because the Federal Circuit held that the patent claim was not obvious given that one of its elements was not disclosed in the prior art, it did not go on to conduct a correct obviousness analysis by considering the other relevant factors and the trial court's findings on those factors. *See* App. 18. That will typically be the case, because the missing-element test inherently truncates the analysis. In this case, however, the trial court's finding of fact and Judge Mayer's dissent demonstrate that, under correct legal standards, the patent claim is obvious.

Obviousness is a question of law based on underlying findings of fact. *Graham*, 383 U.S. at 17. The trial court thoroughly analyzed all of the relevant factors and made findings of fact that are entitled to deference. *E.g.*, App. 121-26, 152-73. As discussed above, the trial court's meticulous consideration of the record shows that the prior art disclosed technology for splitting the color band and using perceptible red light in console displays. *See* pp. 8-10, 17, *supra*.

As the CFC found, therefore, the only question is whether, once a person of skill in the art wanted to have red in a cockpit equipped with night-vision technology, it would have been obvious to use existing filtering technology to split the red color band. *See* App. 156-57. And on that question, the CFC entered fact findings that the majority did not purport to reverse and the dissent accepted. *Id.* at 18, 31-33. The trial court found that the military's changing needs, not any new innovation, provided the incentive to use existing technology to split the red color band. *Id.* at 161-65, 168-72. Those fact findings, the dissent's analysis, and the relative simplicity of the factual questions (compared to most patent cases) make this case an excellent vehicle for both correcting the Federal Circuit's error and illustrating how to conduct a proper obviousness analysis.

II. THE FEDERAL CIRCUIT'S CLEAR-AND-CONVINCING-EVIDENCE STANDARD FOR PROVING INVALIDITY WARRANTS THIS COURT'S REVIEW.

Since shortly after its creation, the Federal Circuit has maintained that a party challenging a patent's validity must prove invalidity by clear and convincing evidence. *See, e.g., Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984). The Federal Circuit relied on that heightened burden of proof in this case by concluding that the defendants "failed to carry [their] burden of pro[of] by clear and convincing evidence . . . ." App. 18. The court of appeals' imposition of that heightened burden of proof, which departs from ordinary principles of law and unfairly slants the courts' and juries' consideration of patents' validity, is another important error that warrants this Court's immediate review.

A. The Federal Circuit's Clear-And-Convincing Standard Conflicts With General Principles Of Law And Ignores The Reality Of The Patent Examination Process.

1. This Court has granted review on multiple occasions to hold that general principles of law that apply in all other contexts also govern in patent cases. *See, e.g., MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007) (declaratory judgment standard); *eBay, Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006) (permanent injunction standard); *Dickinson v. Zurko*, 527 U.S. 150, 165 (1999) (standard of review of agency action). There is

little doubt about the applicable general principles here: in civil suits, the party that bears the burden of proof may overcome that burden with a preponderance of the evidence, unless Congress expressly requires a higher standard or certain important liberty interests are at stake. *See, e.g.*, *Grogan v. Garner*, 498 U.S. 279, 286 (1991). Neither of those exceptions even arguably applies here.

The Patent Act simply states that "[a] patent shall be presumed valid. . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity." 35 U.S.C. § 282. While that statute identifies *who* bears the burden of proof on invalidity, it says nothing about the *evidentiary standard* for carrying that burden. The default preponderance-of-the-evidence standard therefore should apply, but does not in the Federal Circuit.

It is no answer that the statute also establishes a presumption of validity. *All* agency decisions are "entitled to a presumption of regularity." *Citizens to Pres. Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415 (1971). But that presumption, like numerous others—including the presumption of validity for trademarks and copyrights—is overcome by a preponderance of the evidence. *See, e.g.*, *Medforms, Inc. v. Healthcare Mgmt. Solutions, Inc.*, 290 F.3d 98, 114 (2d Cir. 2002) (copyright); *Material Supply Int'l, Inc. v. Sunmatch Indus. Co.*, 146 F.3d 983, 990 (D.C. Cir. 1998) (trademark); *Bracic v. Holder*, 603 F.3d 1027, 1034 (8th Cir. 2010) (fear of persecution in asylum proceedings).

Nor is any special liberty interest at issue here. Patent litigation involves the same types of economic injuries that are at issue in "the typical civil case involving a monetary dispute between private parties." *Addington v. Texas*, 441 U.S. 418, 424, 423 (1979). There is no reason to adopt a heightened burden of proof that gives one side a decided advantage over the other.

2. The Federal Circuit has treated its clear-and-convincing-evidence requirement as a means of deferring to the PTO's issuance of a patent. *See Am. Hoist & Derrick*, 725 F.2d at 1359. Even setting to the side the oddity of using a clear-and-convincing burden of proof as an administrative deference doctrine, the Federal Trade Commission ("FTC") has correctly determined that the PTO's issuance of a patent does not warrant the deference provided by that standard. *See* FTC, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, ch. 5, at [illegible] (2003), *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf ("FTC Report").

Among other things, severe limits on the PTO's resources constrain its ability to examine patent applications thoroughly. This Court identified that problem over four decades ago, *Graham*, 383 U.S. at 18, and the PTO's resources have been stretched even further since then. In 2003, the FTC found that examiners "have from 8 to 25 hours to read and understand each application, search for prior art, evaluate patentability, communicate with the applicant, work out necessary revisions, and reach and write up conclusions." FTC Report, Executive Summary at 10. The number of patent applications

submitted to the PTO has increased by 37% since then, from 355,418 to 485,500 annually, making the situation even worse. *See* PTO, Performance and Accountability Report Tables 1-3 (2009), http://www.uspto.gov/about/stratplan/ar/2009/200annualreport.pdf.

The PTO's resource constraints pose particular problems in light of its *ex parte* examination process. Without an adversary to aid the process and expand the record, a patent examiner often lacks sufficient time to develop an adequate understanding of the relevant technology and prior art. Joseph Farrell & Carl Shapiro, *Intellectual Property, Competition, and Information Technology* (Working Paper 2004), at 33, *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=527782.

The PTO's own reexaminations show that resource constraints and the limits on its *ex parte* examination process cause it to issue many patents in error. When the PTO reexamines a previously issued patent, its second look *normally* reveals that the patent's issuance was in error. *92%* of the patents that go through *inter partes* reexaminations are either cancelled or re-issued only after the patentee amends some or all of the claims. *See* PTO, Quarterly Review: *Inter Partes* Reexamination Filing Data Review (June 30, 2010), http://www.uspto.gov/patents/IP_quarterly_report_June_30_2010.pdf. Patents involved in *ex parte* reexaminations do not fare much better: only 23% have escaped with all claims confirmed. *See* PTO, Quarterly Review: *Ex Parte* Reexamination Filing Data Review (June 30, 2010), http://www.

uspto.gov/patents/EP_quarterly_report_June_30_2010.pdf.

Litigation results provide further confirmation of the PTO's error rate. When judges (though not juries) determine patents' validity on summary judgment or following a bench trial, they invalidate patents approximately half of the time, notwithstanding the daunting burden of proof. *See* Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. Econ. Persp. 75, 76 (2005); Adam B. Jaffe & Josh Lerner, Innovation and Its Discontents 125 (2004). Under a more balanced standard of proof, that number would undoubtedly increase.

As the FTC concluded, "[i]t does not seem sensible to treat an issued patent as though it had met some higher standard of patentability." FTC Report, Executive Summary at 10. Instead, patent litigation is an essential tool for "weeding out . . . those patents that should not have been granted." FTC Report, ch. 5, at 28. The PTO's technical expertise "is counterbalanced by the greater time devoted to validity in the litigation process." Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 Nw. U. L. Rev. 1495, 1510 n.64 (2001).

By "distort[ing] the litigation process," the clear-and-convincing standard insulates patents of dubious quality from adequate scrutiny at any stage, and thereby creates a "serious potential for judicially confirming unnecessary, potentially competition-threatening rights to exclude." FTC Report, ch. 5, at 28. The Federal Circuit has stressed that the clear-and-convincing standard

imposes a "heavy burden" on parties attempting to overcome it. *Honeywell Int'l v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1145 (Fed. Cir. 2004). Not surprisingly, therefore, a significantly greater percentage of patents have been held to be valid since the Federal Circuit imposed the clear-and-convincing requirement. Doug Lichman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 Stan. L. Rev. 45, 69 & n.69 (2007).

3. The Federal Circuit's elevated burden of proof makes especially little sense where, as here, some of the relevant prior art was not meaningfully before the PTO. In *KSR*, this Court observed that the rationale behind the presumption of validity is "much diminished" when the examiner did not actually review the relevant prior art. *KSR*, 550 U.S. at 426. Even though deference to an administrative determination is not at issue in that circumstance, because the PTO has made no relevant determination, the Federal Circuit still applies the clear-and-convincing-evidence standard. *See Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050 (Fed. Cir. 1988). Indeed, the Federal Circuit has long made clear that its heightened standard applies in *all* circumstances. *See, e.g., Am. Hoist & Derrick*, 725 F.2d at 1359.

4. In addition to skewing litigation outcomes, the clear-and-convincing standard has had a corrosive effect on patent law itself. For example, this Court has long held that patent claims must "clearly circumscribe" their scope in order to satisfy the definiteness requirement for patentability. *United Carbon Co. v. Binney & Smith Co.*, 317 U.S.

228, 236 (1942). The Federal Circuit, however, has held that claims may be ambiguous so long as they are not "insolubly ambiguous." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347-48 (Fed. Cir. 2005) (quotations omitted). And it has cited the need to "follow" its own clear-and-convincing requirement as a reason for adopting that more permissive standard. *Id.*

A similar phenomenon appears to be at work here, as the Federal Circuit held that the absence of an element in the prior art meant that the defendants "failed to carry [their] burden of pro[of] by clear and convincing evidence." App. 18. Tying the missing-element test to the clear-and-convincing-evidence standard in that manner does not validate the missing-element test, but it does underscore the pernicious influence of the Federal Circuit's mistaken clear-and-convincing standard. As *Datamize* makes clear, the heightened burden of proof is skewing not only litigation outcomes, but even legal standards.

B. The Federal Circuit Is In Conflict With Every Regional Court Of Appeals.

While circuit splits rarely arise in patent cases since the Federal Circuit's creation in 1982, older regional circuit precedents remain relevant and help identify issues that "merit this Court's attention." *Holmes Group, Inc. v. Vornado Circulation Sys., Inc.*, 535 U.S. 826, 839 (2002) (Stevens, J., concurring). The Federal Circuit's application of a clear-and-convincing standard to

every invalidity challenge conflicts with decisions of all 12 regional circuits.

At least two regional circuits held that the traditional preponderance-of-the-evidence standard generally applies to validity challenges. *Dickstein v. Seventy Corp.*, 522 F.2d 1294, 1297 (6th Cir. 1975); *accord Rains v. Niaqua, Inc.*, 406 F.2d 275, 278 (2d Cir. 1969). At least three others held that the preponderance standard applies at least where, as here, the PTO did not consider the relevant prior art. *See Baumstimler v. Rankin*, 677 F.2d 1061, 1068-69 (5th Cir. 1982); *Mfg. Research Corp. v. Graybar Elec. Co.*, 679 F.2d 1355, 1360-61, 1364 (11th Cir. 1982); *Futorian Mfg. Corp. v. Dual Mfg. & Eng'g, Inc.*, 528 F.2d 941, 943 (1st Cir. 1976). And the remaining regional circuits similarly held that, if the PTO did not consider the relevant prior art, the presumption of validity is "weakened," *United States Expansion Bolt Co. v. Jordan Industries, Inc.*, 488 F.2d 566, 569 (3d Cir. 1973); "weakened, if not completely destroyed," *Ralston Purina Co. v. General Foods Corp.*, 442 F.2d 389, 390 (8th Cir. 1971); *see also Marston v. J.C. Penney Co.*, 353 F.2d 976, 982 (4th Cir. 1965); *Jaybee Mfg. Corp. v. Ajax Hardware Mfg. Corp.*, 287 F.2d 228, 229 (9th Cir. 1961); or diminished to the point that it "does not exist," *Henry Manufacturing Co. v. Commercial Filters Corp.*, 489 F.2d 1008, 1013 (7th Cir. 1972); *see also Turzillo v. P. & Z. Mergentime*, 532 F.2d 1393, 1399 (D.C. Cir. 1976); *Plastic Container Corp. v. Cont'l Plastics of Okla., Inc.*, 708 F.2d 1554, 1558 (10th Cir. 1983).

This Court has articulated a heightened evidentiary standard only in narrow circumstances

that do not remotely apply here. In an older line of cases where a party relied solely on oral testimony for the proposition that a patent was invalid because of a prior use, this Court required proof "beyond a reasonable doubt." *Washburn & Moen Mfg. Co. v. Beat 'Em All Barbed Wire Co.*, 143 U.S. 275, 284 (1892). The Court explained that such uncorroborated oral testimony is "open to grave suspicion." *T.H. Symington Co. v. Nat'l Malleable Castings Co.*, 250 U.S. 383, 386 (1919). In dictum, this Court also required "more than a dubious preponderance" in *Radio Corp. of America v. Radio Engineering Laboratories*, 293 U.S. 1, 8 (1934), a case in which two parties had previously engaged in *inter partes* proceedings before the PTO concerning which of them was entitled to priority of inventorship. That circumstance is far removed from the typical *ex parte* patent application process at issue here. Outside of such unusual circumstances, this Court has held patents invalid without applying, or even mentioning, a heightened evidentiary standard. *E.g.*, *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55 (1998); *Sakraida*, 425 U.S. 273; *Graham*, 383 U.S. 1.

C. This Is The Right Time To Correct The Federal Circuit.

There is no reason to let this issue percolate any longer. The Federal Circuit has denied at least three petitions for rehearing en banc on the clear-and-convincing-evidence issue. *See* Order Denying Rehearing En Banc, *i4i Ltd. P'ship v. Microsoft Corp.*, No. 2009-1504 (Fed. Cir. Apr. 1, 2010); Order Denying Rehearing En Banc, *Lucent Techs., Inc. v. Gateway, Inc.*, No. 2008-1485 (Fed. Cir. Nov. 23,

2009); Order Denying Rehearing En Banc, *z4 Techs., Inc. v. Microsoft Corp.*, No. 2006-1638 (Fed. Cir. Jan. 30, 2008). Indeed, when Microsoft raised this issue in the *i4i* case, the Federal Circuit simply relied on circuit precedent, without further consideration of the issue. *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 848 (Fed. Cir. 2010). And the importance of the issue is underscored by the numerous amicus briefs supporting the petition in *Microsoft v. i4i*.

Because the Federal Circuit's precedent was so well established, petitioners and the United States did not directly dispute the clear-and-convincing standard in the Federal Circuit; that clearly would have been futile. In light of that futility, and the Federal Circuit's express reliance on its entrenched clear-and-convincing standard, the question is properly before this Court in this case. *See United States v. Williams*, 504 U.S. 36, 40-44 (1992). Moreover, the overarching issue is whether the patent was obvious; having preserved that claim, petitioners have every right to raise the burden of proof as a supporting argument. *See Lebron v. Nat'l R.R. Passenger Corp.*, 513 U.S. 374, 379 (1995).

This case presents a rich and nuanced factual vehicle for considering the question, either on its own or in tandem with the pending petition in *Microsoft v. i4i*. As the trial court determined, some of the relevant prior art was not before the PTO at all. App. 74-76. That art included Verney, which the CFC found to disclose "a filter nearly identical to the one" at issue. *See* U.S. Patent No.

6,467,914, pp. 1-2 (listing references considered by examiner); App. 60, 74-75, 157.

Importantly, the patent applicant provided another prior art reference, a German patent, to the PTO only in German, and the CFC found that the PTO never had that reference translated. App. 75-76. The CFC found that the German patent provided a "recipe" for how to split the red color band, and it relied heavily on both the German patent and Verney in concluding that, if the prior art did not disclose the relevant claim limitation, the claim as a whole was nonetheless obvious. *Id.* at 124, 157-62.

The applicant also faxed multiple prior art references (and three new patent claims) to the PTO at 3:49 p.m. on January 16, 2002, and the examiner signed off on the new claims and references *that same day*. *See* Tr. Exh. DMX-38 pp. D001534, D001644. The Boehm reference, which the trial court found to disclose complementary filtering, App. 74-75, 143, was included in those materials. Tr. Exh. DMX-38, pp. D001596-1621.

The fact that important references were not before the PTO at all, or were technically before the PTO but not in a meaningful fashion, confirms that deference to the agency is not warranted. It also cautions against holding that the clear-and-convincing standard applies when, but only when, the PTO considered the relevant prior art. That would be a considerable improvement over the Federal Circuit's existing jurisprudence and would require vacatur in this case. But the better rule is that the default preponderance standard should

always apply, as explained above. And as the facts of this case show, trying to draw a line under which a heightened burden of proof applies in some but not all circumstances would pose serious workability concerns. For that reason, this case provides an excellent vehicle for determining whether the preponderance standard should apply in all circumstances as opposed to only when the prior art was "before" the PTO.

CONCLUSION

For the foregoing reasons, this Court should either summarily reverse on the first question presented or grant plenary review of both questions.

Respectfully submitted,

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APPENDIX

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Appendix A

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

HONEYWELL INTERNATIONAL, INC., and HONEYWELL INTELLECTUAL PROPERTIES, INC.,
Plaintiffs-Appellants,

v.

UNITED STATES,
Defendant-Appellee,

and

LOCKHEED MARTIN CORPORATION,
Defendant-Appellee,

and

L-3 COMMUNICATIONS CORPORATION,
Defendant-Appellee.

2008-5181

Appeal from the United States Court of Federal Claims in 02-CV-1909, Judge Susan G. Braden.

Decided: May 25, 2010

LAWRENCE J. GOTTS, Paul, Hastings, Janofsky & Walker LLP, of Washington, DC, argued for plaintiffs-appellants. With him on the brief was ELIZABETH MILLER ROESEL. Of counsel on the brief was RICHARD G. TARANTO, Farr & Taranto, of Washington, DC.

CHRISTOPHER L. CRUMBLEY, Attorney, Commercial Litigation Branch, Civil Division, United States Department of Justice, of Washington, DC, argued for defendant-appellee United States. With him on the brief were MICHAEL F. HERTZ, Acting Assistant Attorney General, JOHN J. FARGO, Director, and TREVOR M. JEFFERSON, Attorney.

THOMAS J. MADDEN, Venable LLP, of Washington, DC, for defendant-appellee Lockheed Martin Corporation.

JOHN W. HARBIN, King & Spalding LLP, of Atlanta, Georgia, argued for defendant-appellee L-3 Communications Corporation. With him on the brief were CHARLES A. PANNELL, III and RICHARD W. MILLER. Of counsel on the brief was JOHN H. HORNE, Adorno & Yoss, LLC, of Atlanta, Georgia.

Before MAYER, PROST, and MOORE, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* MOORE.

Opinion dissenting-in-part filed by *Circuit Judge* MAYER.

MOORE, *Circuit Judge*.

Honeywell International, Inc. and Honeywell Intellectual Properties, Inc. (collectively, Honeywell) appeal from a final judgment of the U.S. Court of Federal Claims. The Court of Federal Claims held that the government infringed independent claim 2 of the patent-in-suit but that this claim is invalid. The Court of Federal Claims also held that Honeywell lacks standing on its claim for just compensation under the Invention Secrecy Act and that the first sale doctrine precludes Honeywell from recovering damages for one particular infringing system. For the reasons set forth below, we reverse and remand for the trial court to resolve the government's defense related to pre-issuance damages under the Invention Secrecy Act and to determine damages.

BACKGROUND

The patent-in-suit is U.S. Patent No. 6,467,914 B1 (the '914 patent), and it relates to passive night vision goggles (NVGs) that are compatible with a full color display when both are used in an aircraft cockpit. *See* '914 patent col.1 ll.19–21, col.2 ll.1–5. NVGs operate by amplifying available light, specifically light having a relatively long wavelength (e.g., red and infrared light). *See id.* col.1 ll.36–38. Thus cockpit displays that emit this light, specifically red warning lights, can overwhelm NVG sensor elements and lead to disruption of vision through the NVGs. *Id.* col.1 ll.38–41. Still, "[i]t is important that the display indicators remain illuminated, not only for the benefit of the crewmen who are not wearing [NVGs], but also because those

using the goggles will typically view the instruments by looking under the goggles." *Id.* col.1 ll.42–46.

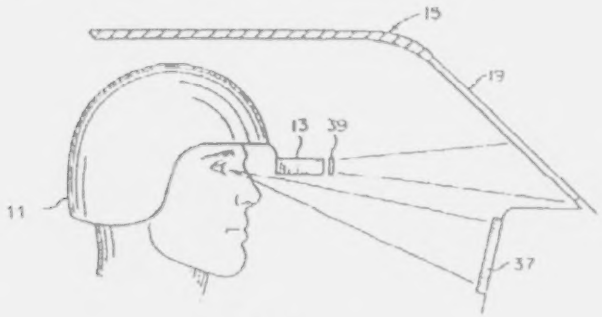


FIG. 2

Prior art solutions involved eliminating and/or dimming red and infrared light from cockpit displays. But filtration used to eliminate this light "must be very efficient because small amounts of light within the active frequency range of the [NVGs] will overwhelm the [NVGs]." *Id.* col.1 ll.51–54. In addition, "[t]he selective filtration of light according to wavelength generally prevents the use of full color displays . . . because frequencies at the lower end of the visible spectrum overlap with those frequencies which are received by the [NVGs]." *Id.* col.1 ll.63–67. This second problem is particularly significant because it prevents the use of red warning lights, which are at the lower end of the visible spectrum, in cockpit displays. Furthermore, with respect to dimming light that is capable of overwhelming NVG sensor elements, the light must be dimmed to such a degree that it is no longer visible by crewman not wearing NVGs and by persons looking under the NVGs.

In the 1980s, the government developed a standard governing interior cockpit lighting that also addressed the problem of NVG compatibility in

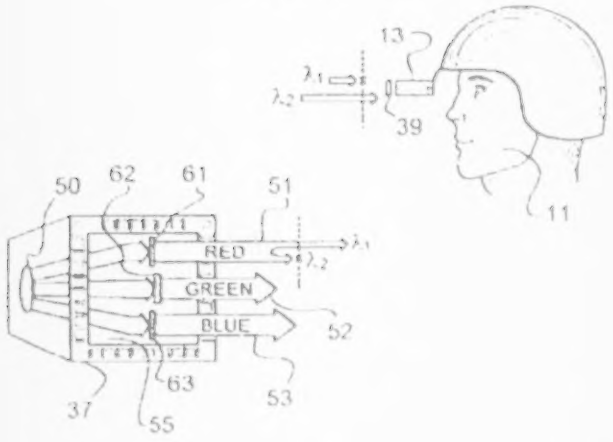
cockpits having full color displays. As witnesses testified at trial, it was important for the government to retain red light in cockpits, particularly for use as warning lights. For example, Dr. Harry Lee Task, a member of the committee developing the military's corresponding specification, testified that because red indicates warning "if at all possible the MIL spec which was in consideration should be such that it would retain red and yellow in the cockpit." J.A. 501730 (explaining that "warning is associated with red and amber is associated with caution"). And Col. William S. Lawrence, Honeywell's expert, testified that "red has always been perceived as the color that denotes danger and we find, as pilots and test pilots, red to be extraordinarily valuable in that role. The immediate perception of danger is crucial to survival and we want red in the cockpit." J.A. 622806. Nevertheless, in January 1986, the government issued a military specification (MIL-L-85762) that prohibited the use of red light in NVG-compatible cockpits.

On October 10, 1985, Allied Corporation filed Patent Application No. 06/786,269 (the '269 application), which taught a way to continue to have red light in NVG-compatible cockpits. Pursuant to the Invention Secrecy Act, David McLure, a Naval Air Systems Command engineer, reviewed this application in March 1986 and concluded that a secrecy order should be imposed. Notably, Mr. McClure served on and eventually chaired the government committee charged with revising MIL-L-85762. After Mr. McClure reviewed the '269 application, the government revised its military specification to permit the use of red light in NVG-compatible cockpits. The PTO imposed secrecy

orders on the '269 application, which prevented the patent from issuing, every year until 2000. By this time, Allied Corporation had become AlliedSignal Inc., which then merged with Honeywell Inc. to form Honeywell International, Inc. This latter entity amended the '269 application, which then issued as the '914 patent.

The invention claimed in the '914 patent permits the use of NVGs in cockpits having full color displays (including red light) without the aforementioned problems associated with the prior art. In the claimed invention, a local color display emits blue, red, and green light. A combination of filters prevents the red light from disrupting vision through the NVGs. Specifically, one filter *passes* only a narrowband (i.e., a narrow range of frequencies) of red light from the display; another filter at the NVG *blocks* that narrowband of red light and *passes* all other ambient red light. *See* '914 patent col.4 ll.54–57, col.5 ll.4–8, col.5 ll.13–15. Thus the narrowband of red light passed from the display does not reach (and overwhelm) the NVG sensor elements. Figure 3 of the '914 patent illustrates this combination of filters.

FIG. 3



Accordingly, red warning lights inside the cockpit do not disrupt vision through the NVGs, pilots can look under NVGs to view the warning lights, and crew members not wearing NVGs can see these lights as well.

In 2002, about two months after the '914 patent issued, Honeywell filed a complaint against the United States. Honeywell's Amended Complaint seeks compensation under the Invention Secrecy Act for pre-issuance use of the invention and under 28 U.S.C. § 1498(a) for post-issuance infringement of at least independent claims 1 and 2. Relevant to this appeal, the Court of Federal Claims construed disputed claim terms, *see Honeywell Int'l, Inc. v. United States*, 66 Fed. Cl. 400 (2005) (*Claim Construction Order*), and held a trial on the issue of infringement by three accused systems: (1) the Color Multifunction Display (CMFD) and NVGs in the F-16 aircraft, (2) the Radar Display Unit (RDU) and NVGs in the C-130H aircraft, and (3) the Color

Multifunction Display Unit (CMDU) and NVGs in the C-130J aircraft.[1] The court determined that all three accused systems infringed claim 2—literally and under the doctrine of equivalents—but that claim 1 and claim 3, which depends from claim 2, were not infringed. *See Honeywell Int'l, Inc. v. United States*, 70 Fed. Cl. 424 (2006) (*Infringement Order*). The Court of Federal Claims then held separate trials on Honeywell's claim under the Invention Secrecy Act, on the government's infringement defenses, and on damages. Ultimately, the court concluded that claim 2 is invalid under 35 U.S.C. § 103(a) and, in the alternative, the written description requirement of 35 U.S.C. § 112, ¶ 1. *See Honeywell Int'l, Inc. v. United States*, 81 Fed. Cl. 514, 538–72 (2008) (*Invalidity/Defenses Order*). The Court of Federal Claims also determined that Honeywell lacks standing under the Invention Secrecy Act because, according to the court, the '914 patent did not issue upon an application that was subject to a secrecy order pursuant to 35 U.S.C. § 181. *See Honeywell Int'l, Inc. v. United States*, 81 Fed. Cl. 224 (2008) (*Invention Secrecy Act Order*). Lastly, the Court of Federal Claims concluded that the first sale doctrine precludes Honeywell from recovering damages from the government for use of infringing CMFDs and NVGs in the F-16 aircraft

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[1] Lockheed Martin Corporation (Lockheed) intervened with respect to the § 1498 claim because it is the supplier and indemnitor to the government for the C-130J aircraft. L-3 Communications Corporation (L-3 Communications) later intervened as an indemnitor to Lockheed because it supplied displays for the C-130J aircraft. We will refer to defendants-appellees, collectively, as "the government."

because Honeywell Inc. manufactured and sold the CMFDs at issue. *See Invalidity/Defenses Order* at 576–77. The Court of Federal Claims entered judgment in favor of the government, and Honeywell appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(3).

DISCUSSION

This appeal raises issues relating to invalidity, standing under the Invention Secrecy Act, and the first sale doctrine. We address each issue in turn.

I. Invalidity

The Court of Federal Claims found that the government proved by clear and convincing evidence that claim 2 of the '914 patent is invalid. Claim 2 recites the following:

> 2. A display system for use in association with a light amplifying passive night vision aid and a local color display including a local source of light having blue, red, and green color bands, comprising:
>
> (a) a plurality of filters at the local color display including
>
> (1) a first filter for filtering the blue color band of the local source of light;

(2) a second filter for filtering the green color band of the local source of light; and

(3) a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band; and

(b) a fourth filter which filters light at the night vision aid, said fourth filter cooperating with said plurality of filters to substantially block at least said narrowband of the red color band from being admitted to the night vision aid.

The Court of Federal Claims based its invalidity determination on 35 U.S.C. § 103(a) and, in the alternative, the written description requirement of 35 U.S.C. § 112, ¶ 1.

A. Obviousness

A patent shall not issue "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a); *see KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406–07 (2007) ("If a court . . . concludes the claimed subject matter was obvious, the claim is

invalid under § 103."). Obviousness is a question of law, which we review *de novo*, with underlying factual questions, which we review for clear error following a bench trial. *See Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1379 (Fed. Cir. 2008). What a particular reference discloses is a question of fact. *See Para-Ordnance Mfg., Inc. v. SGS Imps. Int'l, Inc.*, 73 F.3d 1085, 1088 (Fed Cir. 1995).

The Court of Federal Claims held that claim 2 of the '914 patent would have been obvious to a person of ordinary skill at the time of the invention. *Invalidity/Defenses Order* at 538–67. The court's obviousness determination involved five prior art references. The first reference (Uchida) is an article authored by Tatsuo Uchida, titled "A Liquid Crystal Multicolor Display Using Color Filters," and presented at the First European Display Research Conference held on September 16–18, 1981 in Munich, Germany. The second reference (Stolov) is U.S. Patent No. 4,368,963, titled "Multicolor Image or Picture Projecting System Using Electronically Controlled Slides" and naming Michael Stolov as the sole inventor. The third reference (Boehm) is a paper authored by Dr. H.D.V. Boehm, titled "The Night Vision Goggle Compatible Helicopter Cockpit," and presented at the Tenth European Rotorcraft Forum held on August 28–31, 1984 in The Hague, The Netherlands. The fourth reference (Verney) is an article authored by Jay F. Verney, titled "Aircraft Lighting Systems," and presented at the American Helicopter Society's 41st Annual Forum Proceedings held on May 15–17, 1985 in Fort Worth, Texas. The fifth reference (the German patent application) is German Patent Application No. DE 33 13 899 A1,

published on October 18, 1984. The Court of Federal Claims found that Uchida and Stolov each disclose elements (a)(1) and (2) of claim 2. The court found that Boehm discloses elements (a)(3) and (b). The court also found that Verney discloses element (a)(3) and that the German patent application discloses element (b). Furthermore, the Court of Federal Claims found that it would have been obvious to combine these prior art references. Honeywell argues that the Court of Federal Claims was clearly erroneous in finding, among other things, that Boehm and Verney each disclose element (a)(3).

Element (a)(3) of claim 2 recites "a plurality of filters at the local color display including . . . (3) a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band." The Court of Federal Claims construed "local color display" and "color bands" to require perceptible red light. *Claim Construction Order* at 444; *id.* at 466 ("'color bands' . . . 'include the range of wavelengths, within which the colors blue, red, and green are *visible to the human eye*'" (emphasis added)).[2]

Before the Court of Federal Claims, the parties' disputes regarding infringement and invalidity raised the issue of whether the claimed invention requires the passing of perceptible red light. With

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[2] The Court of Federal Claims further construed "red color band" to mean "[a] range of color from 620 nm to 780 nm" and "narrowband of the red color band" to mean "a narrow range of wavelengths within the red color band." *Claim Construction Order* at 471, 487.

respect to claim 1, the court explained that this claim requires the "local color display" to emit *perceptible* light within the red color band. *Infringement Order* at 464 (concluding that the designated displays emit perceptible light within the red color band). During the phase of the litigation relating to the government's defenses, the Court of Federal Claims explained that this interpretation applies equally to claim 2. *See* Trial Tr. 17:25–18:15, Nov. 13, 2006.

On appeal, the obviousness dispute turns upon whether claim 2 requires perceptible red light. Claim construction is a question of law, which we review *de novo*. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454–56 (Fed. Cir. 1998) (en banc). Claim 2—and specifically element (a)(3)—requires a local color display. The specification describes "[a] local color display which is . . . viewable by the crewmember, although the crewmember would tend to avoid looking through the [NVG] while viewing the color local display." '914 patent col.2 ll.40–44. The specification continues to explain that "[t]he cockpit has several local displays such as [the aforementioned] color display, which are illuminated so as to be clearly visible without the use of the [NVG]." *Id.* col.2 ll.57–59. In addition, figure 3 of the specification depicts a local color display with a local source of light that comprises red, green, and blue color bands. *Id.* col.4 ll.40–41. The Court of Federal Claims' undisputed construction of color bands requires light that is "visible to the human eye."

We conclude that the proper construction of local color display is that it must emit perceptible red light. Furthermore, element (a)(3) is a filter that

passes a narrow band of this red light. The claimed invention addressed the need for red warning lights in NVG-compatible cockpits, and it is inconceivable that an aircraft would use warning lights that are not perceptible to the crew. In other words, there would be no point, in the context of this invention, to pass a narrowband of red light that cannot be seen. The local color display emits perceptible red light, and element (a)(3) requires a narrow band of this perceptible red light to pass. We conclude, therefore, that element (a)(3) requires the passing of perceptible red light—i.e., red light which is visible to the human eye.

In the context of obviousness, however, it appears as though the Court of Federal Claims deviated from its earlier construction with regard to claim 2. Specifically, the court stated that its claim construction "did not require the *perception* of the red primary of a full color display" and instead that the local color display requires only that "at least one color [be] perceptible." *Invalidity/Defenses Order* at 545 (alteration in original). Importantly, the Court of Federal Claims' obviousness determination is premised on the conclusion that element (a)(3), and in fact, claim 2, does not require the passing of perceptible red light. In light of the correct construction of element (a)(3), which requires the passing of perceptible red light, we conclude that claim 2 would not have been obvious to one of skill in the art. Neither Boehm nor Verney disclose passing perceptible red light.

The government provided no evidence that either Boehm or Verney discloses perceptible red light. The government's expert, Dr. Task, testified that "Boehm

discloses a splitting of the red color band at about 710 nm," but he did not testify that Boehm discloses the passing of *perceptible* red light. J.A. 623157. Honeywell presented unrebutted expert testimony from Mr. Tannas that graph IV of figure 3 does not disclose the passing of perceptible red light:

> Based upon the information contained in [Boehm, Uchida and Stolov], it cannot be shown that the LCD display of [Uchida] or the projection display of [Stolov] would pass a "narrowband of the red color band" if filtered with the BG 7 filter. These references contain no information regarding the emission spectrum of any light source that would be used to illuminate the LCD or projection display and no information regarding the emission spectrum of light emitted by the display after filtering with BG 7. Therefore it cannot be shown that the LCD display of [Uchida] or the projection display of [Stolov] filtered with BG 7 would emit light within the red color band or that such light would be perceptible.

J.A. 622958. According to Mr. Tannas, "[b]ased upon its transmission spectrum, it appears to me that the BG 7 filter would suppress red to such a degree that any red light passing through the filter would not be sufficient to provide the red primary of a full color display." J.A. 622958–59. This unrebutted expert testimony is consistent with various statements in Boehm. For example, according to section 3 of Boehm, which identifies problems of cockpit illumination, "[t]he main idea is to use only special *green* and *blue* illumination in the cockpit or switch

off all lighting and use a special type of floodlight when necessary." J.A. 605298. This requirement of "blue/green lighting" is listed among "the most important factors for a NVG compatible cockpit." *Id.* Moreover, Boehm mentions the filtering of "red and near [infrared]" light only with respect to incandescent lighting and discusses green/blue light with respect to lighting from the display. Boehm also states that "filtering conventional incandescent lighting with dyed-glass filters [such as BG-7] should be used sparingly." J.A. 605302. Because the Court of Federal Claims' analysis was premised on an erroneous claim construction, it clearly erred in finding that Boehm discloses element (a)(3) of claim 2.

With respect to Verney, the Court of Federal Claims' analysis was more limited. *See Invalidity/Defenses Order* at 546. First, the court relied on Dr. Task's testimony that Verney "shows *excellent transmission* out to about 640 nm and *measurable transmission* out to about 700 nm." J.A. 623178. Again there is no testimony on whether this would result in perceptible red light. Verney teaches the conventional wisdom that "red or white integral lighting systems cannot be activated while the pilot is using NVGs due to their adverse interaction . . . . To meet this deficiency, a new infrared free blue-green light has emerged as the basic type of light to be used in NVG applications . . . ." J.A. 623393. Though the government claims Verney discloses a transmission of wavelengths within the red color band construed by the trial court, there is no evidence that this transmission results in any perceptible red light visible to the human eye. Second, the court stated that "Honeywell does not

dispute that Verney discloses claim 2(3)(a) [sic]." *Invalidity/Defenses Order* at 546 (citing Pls.' Post-Trial Opp'n Br. Regarding Defenses 61–62). But this statement is directly contradicted by Honeywell's brief before the Court of Federal Claims. Citing testimony by Mr. Tannas, Honeywell argued that "one of ordinary skill in the art would understand that, because Verney teaches that the filtered red warning light does not adversely affect the performance of the NVGs, the red warning light would have to be dimmed to a level where it is not perceptible to the human observer." Pls.' Post-Trial Opp'n Br. Regarding Defenses 65 (explaining that "the Court's claim construction requires that the 'narrowband of the red color band' that is emitted by a local color display be perceptible"). Honeywell unambiguously contended that "Verney (DE-511) is completely unrelated to the '914 invention." *Id.* Third, according to the Court of Federal Claims, "Mr. Tannas also agreed that '[Verney] is very close to the CMFD filter.'" *Invalidity/Defenses Order* at 546 (alteration in original). This statement alone, however, cannot support a finding that Verney discloses the passing of perceptible red light. Indeed it is clear from the reference itself that Verney discloses only dimming and blocking near infrared light, which is not the same as passing perceptible red light. Specifically, Verney identifies two approaches for permitting aircraft pilots to see caution and warning lights *through* NVGs: (1) use limited filtering to "cut[] out the near infrared [light]" and (2) "where installation of limited filtering proves impracticable," use dimming to "set the intensity low enough so that [the] energy level can be seen through the NVGs." J.A. 623400 (stating in the

context of the first approach that "[t]his filter when combined with a source that is dimmable provides an effective warning since the energy emitted from the display stands out in the NVG without adversely affecting their performance"). Verney concludes: "One significant finding during the BLACK HAWK development program is that red warning lights are permissible in the cockpit if the appropriate filtering and dimming is present." J.A. 623402. The government points to no record evidence to support a finding that Verney discloses perceptible red light. For these reasons, the Court of Federal Claims committed clear error in finding that Verney discloses element (a)(3) of claim 2. Given the failure to prove that the cited references disclose element (a)(3), the government has failed to carry its burden of proving by clear and convincing evidence that the claimed invention would have been obvious to one of skill in the art. In light of the foregoing, we need not address Honeywell's additional argument that the objective considerations warranted a determination of nonobviousness.

B. Written Description

The Court of Federal Claims concluded, in the alternative, that claim 2 is invalid under the written description requirement of 35 U.S.C. § 112, ¶ 1. *Invalidity/Defenses Order* at 567–72. "Compliance with the written description requirement is a question of fact." *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1376 (Fed. Cir. 2009). To comply, a patent applicant must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the [claimed] invention." *Vas-Cath Inc. v.*

Mahurkar, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991) (emphasis omitted).

According to the Court of Federal Claims, claim 2 encompasses a variety of displays, but the originally filed '269 application "contains no indication that the inventor conceived of the invention being used with any displays other than CRTs." *Invalidity/Defenses Order* at 570. During prosecution of the '914 patent, Honeywell amended the '269 application to substitute claims from another application for which the PTO had issued a notice of allowability. Honeywell also amended the specification and drawings of the '269 application, including replacing figure 3. It is true that figures 2 and 3 of the original application disclosed an embodiment using a local display (37) consisting of three monochromatic CRTs (51–53). But the original application also explained that "[i]n the case of the local display 37 using separate cathode ray tubes 51–53 *or other display transducers*, it is possible to more easily filter offending colors from reaching the [NVG]." J.A. 606271 (emphasis added). Moreover, the original application stated that "[w]hile specific configurations of the local display . . . 37 have been described, it is understood that the present invention can be applied to a wide variety of display and vision aid devices." J.A. 606272. While original figure 3 may have disclosed a CRT, there is no reason, in light of the other statements in the specification, to limit the disclosure to only CRTs. For these reasons, the Court of Federal Claims clearly erred in finding that the original application's disclosure was limited to CRT displays and that claim 2 of the '914 patent is invalid under the written description requirement of 35 U.S.C. § 112, ¶ 1.

C. Indefiniteness

The government contends that the Court of Federal Claims' invalidity determination could alternatively be affirmed by concluding that claim 2 is indefinite under 35 U.S.C. § 112, ¶ 2. Indefiniteness is a question of law, which we review *de novo*. *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1376 (Fed. Cir. 2001). "[A] claim is indefinite only if the 'claim is insolubly ambiguous, and no narrowing construction can properly be adopted.'" *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338–39 (Fed. Cir. 2003) (quoting *Exxon*, 265 F.3d at 1375). "If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds." *Exxon*, 265 F.3d at 1375. Nevertheless, "[e]ven if a claim term's definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise claim scope." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1251 (Fed. Cir. 2008).

The Court of Federal Claims concluded that claim 2 is not indefinite. *Invalidity/Defenses Order* at 574–76. The court construed "local color display" to require "color perceptible to an observer or observers utilizing a night vision aid." *Claim Construction Order* at 444. According to the government, claim 2 is indefinite because "perceptible" is a subjective standard amenable to two different interpretations—color and brightness. We disagree. In *Minnesota Mining & Manufacturing*

Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559 (Fed. Cir. 1992), we upheld a construction of "lubricant" that used the term "slippery." *Id.* at 1567. The accused infringer argued that this construction "renders the claims indefinite because it is impossible to know how 'slippery' the product has to be." *Id.* We explained that this argument was "improperly framed in its use of the term 'slippery' because this term is not used in the claims. The claims only require lubrication." *Id.* We then held that "the amount of lubrication required is laid out in the specification and should be sufficient to achieve the fundamental purpose of the invention." *Id.* (stating also that "we do not perceive any difficulty or confusion in determining what is 'lubricated' and what is not lubricated in terms of the . . . patent").

In this case, claim 2 requires a "local color display" and it is the court's construction that uses the term "perceptible." Accordingly, like the accused infringer in *Minnesota Mining & Manufacturing*, the government improperly frames its argument by focusing on the term "perceptible." With respect to the claim term "local color display," the patent specification explains that the display is "viewable by the crewmember." '914 patent col.2 ll.40–42. The specification further describes a local color display that uses a local source of light comprising red, green, and blue color bands, *see id.* col.4 ll.40–45, which the Court of Federal Claims construed as "includ[ing] the range of wavelengths, within which the colors blue, red, and green are *visible to the human eye*." *Claim Construction Order* at 466 (emphasis added). Moreover, the fundamental purpose of the invention is to permit displays that convey information—i.e., red warning lights—to

crewmembers in an aircraft cockpit without such light overwhelming sensor elements in NVGs. We do not perceive any difficulty or confusion in determining what is a local color display and what is not a local color display in terms of the '914 patent. That is, local color displays are displays that emit visible, color light. Therefore, because "local color display" is amenable to construction and is not insolubly ambiguous, we agree with the Court of Federal Claims that the government did not meet its burden of proving that claim 2 is indefinite.

In sum, we conclude that the government has not met its burden of proving that claim 2 is invalid. In about 1-1/2 pages of briefing, L-3 Communications provides four alternative bases on which to affirm. We see no merit in these arguments.

II. Invention Secrecy Act

Honeywell's Amended Complaint also seeks compensation under the Invention Secrecy Act for pre-issuance use of the invention. The Court of Federal Claims concluded that "Honeywell cannot establish the second element of Article III standing to assert a claim for just compensation under the Invention Secrecy Act, i.e., 'causation—a fairly traceable connection between the plaintiff's injury and the complained-of conduct of the defendant.'" *Invention Secrecy Act Order* at 233 (quoting *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 103 (1998)). The "right to compensation" provision of the Invention Secrecy Act provides as follows:

> The owner of any patent *issued upon an application* that was subject to a secrecy

> order issued pursuant to section 181 of this title, who did not apply for compensation [from a government agency] as above provided, shall have the right, after the date of issuance of such patent, to bring suit in the United States Court of Federal Claims for just compensation for the damage caused by reason of the order of secrecy and/or use by the Government of the invention resulting from his disclosure.

35 U.S.C. § 183 (emphasis added). Section 184 states that "[t]he term 'application' when used in this chapter includes applications and any modifications, amendments, or supplements thereto, or divisions thereof." *Id.* § 184. The Court of Federal Claims concluded that "Honeywell's '914 patent did not issue 'upon' or 'on' the '269 Application as there is no contiguous relationship or dependence between the two." *Invention Secrecy Act Order* at 233. According to the Court of Federal Claims, "the claims in the '269 Application, subject to the April 2, 1986 Secrecy Order, were completely different than the claims in the '914 patent that issued on October 22, 2002." *Id.* at 232.

The court's interpretation of § 183 contradicts the plain language of the statute and its creation of a "contiguous relationship or dependence" test lacks any foundation in the text of the statute itself. The '269 application issued, albeit after amendment, as the '914 patent. Section 184 explicitly includes amendments made to an application. Honeywell owns the '914 patent, this patent issued from the '269 application, this application was subject to a secrecy order. Honeywell thus has standing to assert

a claim for just compensation under the Invention Secrecy Act.

The government argues that several issues remain to be decided regarding Honeywell's pre-issuance damages claim. All but one of these defenses, however, have been resolved by our decision on standing. Claim amendments during prosecution cannot defeat entitlement as the statute does not require the proposed claims to have issued – we have rejected the trial court's "contiguous relationship or dependence" test. The only remaining issue is the government's defense related to pre-issuance damages for "use by the Government of the invention resulting from his disclosure." On remand, the Court of Federal Claims should determine whether the statute requires that the government use must result from the disclosure, and, if so, whether it does in this case.

III. First Sale Doctrine

The Court of Federal Claims concluded that the first sale doctrine precludes Honeywell from recovering damages from the government for use of at least one infringing system. This appeal concerns three accused systems: (1) the Color Multifunction Display (CMFD) and NVGs in the F-16 aircraft, (2) the Radar Display Unit (RDU) and NVGs in the C-130H aircraft, and (3) the Color Multifunction Display Unit (CMDU) and NVGs in the C-130J aircraft. Importantly, Honeywell Inc.[3] manufactured

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[3] Recall that AlliedSignal was the original assignee of the '914 patent and that Honeywell (specifically Honeywell

and sold the CMFDs. According to the Court of Federal Claims, the first sale doctrine thus precludes Honeywell from recovering damages from the government for use of infringing CMFDs and NVGs in the F-16 aircraft. For the first sale doctrine to apply, there must be an authorized first sale. *See Jazz Photo Corp. v. Int'l Trade Comm'n*, 264 F.3d 1094, 1105 (Fed. Cir. 2001) ("To invoke the protection of the first sale doctrine, the authorized first sale must have occurred under the United States patent."). This case presents a peculiar set of facts, to be sure. Nevertheless, Honeywell Inc.'s sale of infringing CMFDs was not authorized because, at the time of the sale, Honeywell Inc. had no rights under the '914 patent, which AlliedSignal owned. The fact that Honeywell now owns the patent does not retroactively authorize the earlier sale. As such, the first sale doctrine does not preclude Honeywell from recovering damages against the government for use of infringing CMFDs and NVGs in the F-16 aircraft. To the extent that the government has recourse, such recourse is not through the first sale doctrine.

CONCLUSION

We conclude (1) that the government has not proved by clear and convincing evidence that claim 2 of the '914 patent is invalid, (2) that Honeywell has standing to assert a claim for just compensation under the Invention Secrecy Act, and (3) that the

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International, Inc.) resulted from a December 1999 merger between AlliedSignal and Honeywell Inc.

first sale doctrine does not preclude Honeywell from recovering damages against the government for use of infringing CMFDs and NVGs in the F-16 aircraft. Accordingly, the final judgment of the Court of Federal Claims is reversed. We remand for the trial court to resolve the government's defense related to pre-issuance damages under the Invention Secrecy Act and to determine damages.

REVERSED and REMANDED

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

HONEYWELL INTERNATIONAL, INC., and HONEYWELL INTELLECTUAL PROPERTIES, INC.,
Plaintiffs-Appellants,

v.

UNITED STATES,
Defendant-Appellee,

and

LOCKHEED MARTIN CORPORATION,
Defendant-Appellee,

and

L-3 COMMUNICATIONS CORPORATION,
Defendant-Appellee.

2008-5181

Appeal from the United States Court of Federal Claims in 02-CV-1909, Judge Susan G. Braden.

MAYER, *Circuit Judge*, dissenting-in-part.

In my view the trial court correctly decided that claim 2 of U.S. Patent No. 6,467,914 ("the '914 patent") is invalid as obvious, that U.S. Patent Application No. 06/786,269 ("the '269 application"), which eventually issued as the '914 patent, did not

fully disclose the invention of claim 2 of the '914 patent, and that Honeywell International Inc. and Honeywell Intellectual Properties Inc. (collectively "Honeywell") are precluded from recovering damages for infringement by products that a predecessor company, Honeywell Inc., sold to the government. I therefore respectfully dissent from Parts I.A, I.B, and III of the court's opinion.

I. Obviousness

The '914 patent claims a color display system, such as that used in aircraft cockpits, that is compatible with the use of night vision goggles ("NVGs"). Compatibility between a color display and NVGs is a concern because the presence of too much light inside the cockpit, particularly light with wavelengths in the red and infrared regions of the spectrum, can overwhelm NVGs and interfere with their use. There is no dispute that elements (a)(1) and (a)(2) of claim 2 of the '914 patent, which discuss filtering of the blue and green bands of the color display, were well known in the art in 1985, the year the '269 application was filed. Honeywell argues that what would not have been obvious in 1985 is the idea of "splitting" the red color band, using filters to allow a narrowband of red to be displayed while blocking this same narrowband at the NVGs, as is taught by claim 2 elements (a)(3) and (b). As the trial court correctly found, however, the prior art does disclose this concept. One of ordinary skill in the art in 1985 would have known how to apply this prior art to a color display in a cockpit and make adjustments to the filters and light source to achieve the display system taught in claim 2 of the '914 patent. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398,

421 (2007) ("A person of ordinary skill is . . . a person of ordinary creativity, not an automaton."). I would therefore affirm the trial court's determination that the claim is invalid as obvious.

Element (a)(3) of claim 2 of the '914 patent teaches a filter "for filtering the red color band . . . and passing a narrowband of the red color band." According to the trial court's construction, the red color band represents light with a wavelength between 620nm and 780nm. *Honeywell Int'l, Inc. v. United States*, 66 Fed. Cl. 400, 470-71 (2005) (*Claim Construction Order*). One of the prior art references employs a filter that passes red light from 620nm to 710nm, thereby teaching the limitation of element (a)(3) of claim 2. *See* H.D.V. Boehm, *The Night Vision Goggle Compatible Helicopter Cockpit*, Tenth European Rotorcraft Forum, August 28-31, 1984 ("Boehm"). A second prior art reference also discloses the limitation of element (a)(3), as it describes filtering that allows for "excellent transmission throughout the visible region and then cuts out the near infrared." *See* Jay F. Verney, *Aircraft Lighting Systems*, American Helicopter Society, 41st Annual Forum Proceedings, May 15-17, 1985 ("Verney"). According to the government's expert, Verney "shows *excellent transmission* out to about 640 nm and *measurable transmission* out to about 700 nm."

The majority agrees with Honeywell's argument that the limitation of element (a)(3) of claim 2 is not met because the filters employed in Boehm and Verney would not pass perceptible red light. This argument confuses the trial court's holding that claim 2 requires perceptible light to be emitted

within the wavelengths defined as the red color band with a holding that claim 2 requires light to be emitted which is perceived as red. The trial court consistently held the former—in its orders on claim construction, infringement, and validity—and never held the latter. *See e.g. Honeywell Int'l, Inc. v. United States*, 70 Fed. Cl. 424, 464 (2006) (*Infringement Order*) (noting that the light emitted need not be perceived as red to infringe the red color band element of claim 1); *id.* at 467 ("Claim 2(a)(3) of the '914 patent requires *only* that the third filter pass a 'narrow band at the red color band,' i.e., a narrow range of wavelengths within 620 nm to 660 nm.") (emphasis added); *Honeywell Int'l Inc.*, 81 Fed. Cl. 514, 545 (2008) (*Invalidity/Defenses Order*) ("The court's claim construction . . . did not require the *perception* of the red primary of a full color display.").* In fact, the trial court specifically found that the accused systems infringe claim 2 despite the fact that they do not emit perceptible red light; there is no indication that the accused systems would have been found to infringe had the trial court applied the majority's new construction. *Infringement Order*, 70 Fed. Cl. at 467; *see also id.* at 464 (rejecting the argument that an accused system did not infringe claim 1 because there was no evidence that it

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* While the trial court construed "color bands" "to include the range of wavelengths, within which the colors blue, red, and green are visible to the human eye," *Claim Construction Order*, 66 Fed. Cl. at 466, this construction does not mean that each color band is only present when a human can perceive the relevant color. Instead, the construction reflects the fact that the range of wavelengths associated with each band can only be defined in terms of colors perceived by humans.

"produces red energy that can be detected by the human eye"). In any case, testimony by experts for both Honeywell and the government indicates that one of skill in the art at the time would have known how to adjust the light source to increase the perceptibility of the light in the red color band while employing the filters of Boehm or Verney. In determining whether a patented invention is invalid for obviousness, "we do not ignore the modifications that one skilled in the art would make to a device borrowed from the prior art." *In re Icon Health & Fitness, Inc.*, 496 F.3d 1374, 1382 (Fed. Cir. 2007).

Element (b) of claim 2 of the '914 patent employs a complementary filter at the NVGs, which blocks the same narrowband of red light that is passed by the filter of element (a)(3). The use of such a complementary filter at the NVGs is described in Boehm and a third prior art reference, German Patent Application, DE 33 13 899, Oct. 18, 1984 ("the German patent"). While neither reference teaches a cutoff point (below which light will be blocked from entering the NVGs) in the red color band, as is taught by the '914 patent, one skilled in the art at the time the patent application was filed would have understood that this cutoff point could be shifted along the wavelength spectrum. In fact, the German patent clearly teaches that the cutoff point can be set at any wavelength, explaining that the display filter must simply block light above some threshold wavelength and the NVG filter must block light below that threshold wavelength.

The prior art therefore discloses all the elements of claim 2 of the '914 patent. While none of the references perform the filtering exactly as taught by

the claim, that does not preclude a finding of obviousness. *KSR Int'l*, 550 U.S. at 418 ("[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). Once the military made the decision to allow more red light in the cockpit, at the expense of NVG performance, it would have been obvious to those skilled in the art to combine these references to allow the display of a limited amount of red light in such a way as not to interfere with the NVGs, which is taught by claim 2.

Honeywell's argument against obviousness relies heavily on secondary considerations. It places great weight on the fact that, prior to the filing of the '269 application, the military solved the NVG compatibility problem by limiting the amount of red light in cockpits. The military later provided a second option to pilots that allowed a small amount of red light to be displayed with a corresponding degradation in NVG functionality. According to Honeywell, this change reflects the military's review of the '269 application, pursuant to the Invention Secrecy Act, between the issuance of the two specifications governing NVG use in cockpits. Several military witnesses testified, however, that the two events are unrelated. *Invalidity/Defenses Order*, 81 Fed. Cl. at 564-65. The change in the military specification reflected a desire on the part of some military pilots, particularly those of fixed-wing aircraft, to sacrifice some amount of NVG sensitivity in exchange for allowing more red light to be displayed in the cockpit. This was a simple shift, changing the cutoff point for the red light that could

be displayed (and was therefore blocked by the NVGs) from 625nm to 665nm, a shift that was well within the technical ability of those of ordinary skill in the art at the time.

An additional influence on the military specification was the advancements made to the color displays themselves, which were in their infancy at the time the original NVG specification was drafted. Problems with the use of color displays that were independent of NVG compatibility—in particular their limited daylight readability—initially prevented the military from attempting to accommodate their use in cockpits. Once these problems were resolved and color displays could otherwise be implemented, their compatibility with NVGs became more important. These factors, not the review of the '269 application, caused the military to adjust the specification governing red light in cockpits. *See KSR Int'l*, 550 U.S. at 419 ("[I]t often may be the case that market demand, rather than scientific literature, will drive design trends."). The secondary considerations advanced by Honeywell are therefore insufficient to overcome the strong showing of obviousness.

II. Written Description

The three claims that issued in the '914 patent were not filed with the original '269 application. Instead, they were first filed in a continuation of the related '268 application, years after the '269 application was filed. Honeywell later abandoned the continuation and transferred its allowed claims to the '269 application, making conforming amendments to the '269 specification and drawings.

The trial court held that the '269 application did not fully disclose the invention of claim 2 of the '914 patent. The '914 patent claims "a local source of light having blue, red, and green color bands." To this single, multiband source of light the '914 patent applies "a plurality of filters," including one that filters only the red color band and passes a narrowband of red. In contrast, the '269 application claimed a local source of light that "includes a plurality of distinct monochromatic color generators." In other words, each color generator would emit a single color: red, green, or blue. The application further claimed a bandpass filter "arranged to block light from one of said color generators except at preferred range of frequencies." In this manner the '269 application sought to limit the red light emitted by the display; a bandpass filter over the red color generator would allow only a portion of the red color band to pass.

In order to meet the written description requirement of 35 U.S.C. § 112, the specification "must describe the invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application, i.e., that the patentee invented what is claimed." *LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005). There is no indication in the '269 application that the inventor conceived, at that time, the invention in claim 2 of the '914 patent, which filters a single source of light carrying multiple color bands. As noted by the trial court, the use of the bandpass filter described in the '269 application over the multiband light source claimed in the '914 patent would render the full color display inoperative.

Invalidity/Defenses Order, 81 Fed. Cl. at 569-70. This is because the bandpass filter of the '269 application would block everything except the narrow red band, including the blue and green light, resulting in the display of only red light. The trial court therefore did not commit clear error in finding that the original disclosure of three separate, monochromatic light generators would not demonstrate to one skilled in the art that the inventor possessed the subject matter of claim 2 at the time the application was filed.

III. First Sale Doctrine

One of the accused infringing devices, the Color Multi-function Display ("CMFD") installed in F-16 aircraft, was manufactured and sold to the government by Honeywell Inc. prior to its 1999 merger with AlliedSignal Inc., the company that held the rights to the '269 application. Honeywell resulted from the merger of the two companies. The trial court held that Honeywell is barred by the first sale doctrine from recovering damages for infringement because "[t]he patentee and the seller of the patented product . . . are now the same corporate entity." *Invalidity/Defenses Order*, 81 Fed. Cl. at 576-77. Once again, I would affirm.

The sale by a patentee of a patented product extinguishes the patent rights with respect to that product. *Quanta Computer, Inc. v. LG Elecs., Inc.*, 128 S. Ct. 2109, 2115 (2008). While the seller of the CMFDs did not hold the rights to the '269 application at the time they were sold, the interests of the owner of the application later merged with those of the company that sold the infringing devices. Because

Honeywell received compensation for the sales, through Honeywell Inc., its patent rights in those products are extinguished. The majority's contrary finding allows Honeywell to recover for infringement when Honeywell itself is the ultimate recipient of the profits from the sale of the infringing products.

This situation parallels that presented in *AMP Inc. v. United States*, 389 F.2d 448 (Ct. Cl. 1968). There the court held that a patentee was barred from using a preexisting, but later acquired, patent to derogate from a license negotiated under a different patent, noting "[t]he grantor is estopped from taking back in any extent that for which he has already received consideration." *Id.* at 452; *see also Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1451 (Fed. Cir. 1997) ("Generally, when a seller sells a product without restriction, it in effect promises the purchaser that in exchange for the price paid, it will not interfere with the purchaser's full enjoyment of the product purchased."). Similarly, Honeywell should not be permitted to interfere with the government's enjoyment of products sold to the government by its predecessor.

Appendix B

In the United States Court of Federal Claims

No. 02-1909 C

HONEYELL INTERNATIONAL, INC. and HONEYWELL INTELLECTUAL PROPERTIES, INC.

v.

THE UNITED STATES

JUDGMENT

Pursuant to the court's Orders filed June 15, 2006 and July 16, 2008,

IT IS ORDERED AND ADJUDGED this date, pursuant to Rule 41(a)(2), that Count III of the May 31, 2005, amended complaint is dismissed with prejudice.

IT IS FURTHER ORDERED AND ADJUDGED this date, pursuant to Rule 58, that final judgment is entered in favor of the Government with respect to Counts I and II of the amended complaint, and Counts I and II are dismissed.

July 23, 2008 By: John S. Buckley
Acting Clerk of
Court

s/ Debra L. Samler
Deputy Clerk

NOTE: As to appeal, 60 days from this date, see RCFC 58.1, re number of copies and listing of all plaintiffs. Filing fee is $455.00.

Appendix C

In the United States Court of Federal Claims

No. 02-1909C
Filed: July 16, 2008

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HONEYWELL INTERNATIONAL INC.,
and HONEYWELL INTELLECTUAL
PROPERTIES INC.,
Plaintiffs,

v.

THE UNITED STATES,
Defendant, and

LOCKHEED MARTIN CORP.
and L-3 COMMUNICATIONS CORP.,
Defendant-Intervenor.

****

FINAL ORDER

On June 14, 2005, the court issued a Memorandum Opinion And Order in *Honeywell Int'l Inc.* v. *United States*, 66 Fed. Cl. 400 (2005), Construing Certain Claims of United States Patent No. 6,467,914 (the "914 patent"). From August 1, 2005 to August 8, 2005, the court held an evidentiary hearing regarding patent infringement allegations as to, (1) the display system for F-16 aircraft, including one or more Color Multifunction Display ("CMFD"), manufactured by a predecessor to Honeywell,

together with one or more night vision goggle having a Class B or Class C minus blue filter ("NVG"); (2) the display system for C-130H aircraft, including one or more Radar Display Unit ("RDU") manufactured by L-3 (or its predecessor Avionics Display Corporation), together with one or more NVG; and (3) the display system for C-130J aircraft, including one or more Color Multifunction Display Unit ("CMDU") manufactured by L-3, together with one or more NVG (hereinafter, the "Designated Display Systems"). On April 28, 2006, the court issued a Memorandum Opinion and Order in *Honeywell Int'l Inc.* v. *United States*, 70 Fed. Cl. 424 (2006), Regarding Infringement Of United States Patent No. 6,467,914, holding that none of the Designated Display Systems infringed claim 1 or claim 3 of the '914 patent.

In light of the above referenced Memorandum Opinions and Orders, incorporated herein, Honeywell International Inc. and Honeywell Intellectual Properties, Inc. (collectively, "Honeywell"), as a matter of law, cannot establish infringement as to claims 1 and 3 of the '914 patent regarding products other than the Designated Display Systems. Honeywell's ability to pursue such claims is dependant upon reversal, removal, modification, or other alteration of either or both of these decisions on appeal. On July 3, 2008, the parties stipulated and the court herein orders that: Honeywell's right to appeal from this Final Judgment is expressly reserved and, in the event that Honeywell prevails on appeal, Honeywell's right to pursue any claims regarding non-Designated Display Systems is expressly reserved.

Accordingly, pursuant to RCFC 58, the Clerk of the United States Court of Federal Claims is hereby directed to enter Final Judgment in favor of the Government with respect to Counts I and II of the May 31, 2005 Amended Complaint.

IT IS SO ORDERED.

s/ Susan G. Braden
SUSAN G. BRADEN
Judge

Appendix D

In the United States Court of Federal Claims

No. 02-1909C
Filed: April 14, 2008
TO BE PUBLISHED

****

HONEYWELL INTERNATIONAL INC., and HONEYWELL INTELLECTUAL PROPERTIES INC.,
Plaintiffs,

v.

THE UNITED STATES,
Defendant, and

LOCKHEED MARTIN CORP.,
Defendant-Intervenor, and

and L-3 COMMUNICATIONS CORP.,
Defendant-Intervenor.

****

Anticipation, 35 U.S.C. § 102(a), (b);
Best Mode;
Definiteness, 35 U.S.C. § 112 ¶ 2;
Disclosure, 35 U.S.C. § 112 ¶ 1;
Enablement;
"First Sale" Doctrine;
Implied License;
Inequitable Conduct;
Jurisdiction;

Obviousness;
Ordinary Skill In The Art;
Patent Act, 35 U.S.C. §§ 102(a),(b), 112, 282;
Patent Infringement Defenses;
Prior Art;
Prosecution Laches;
Secondary Considerations;
Teaching Away;
Validity, 35 U.S.C. § 282.

Lawrence J. Gotts, Mark Koehn, and Elizabeth Miller Roesel, Paul, Hastings, Janofsky & Walker, LLP, Washington, D.C., Counsel for Plaintiffs.

Christopher L. Crumbley and Trevor M. Jefferson, United States Department of Justice, Civil Division, Commercial Litigation Branch, Washington, D.C., Counsel for Defendant.

Thomas J. Madden, Paul A. Debolt, and Justin E. Pierce, Venable, LLP, Washington, D.C., Counsel for Defendant-Intervenor, Lockheed Martin Corp.

John Harbin, King & Spalding, Washington, D.C., Counsel for Defendant-Intervenor, L-3 Communications Corp.

MEMORANDUM OPINION[1] REGARDING PATENT INFRINGEMENT DEFENSES.

The Government and Defendant-Intervenors have asserted ten patent infringement defenses including: validity; anticipation; obviousness; the written description requirement; enablement; best mode; definiteness; the "first sale" doctrine; inequitable conduct; and prosecution laches.

The court has determined herein that claim 2 of the '914 patent was obvious and failed to meet the written description requirement of Section 112 ¶ 1 of the Patent Act, 35 U.S.C. § 112. In addition, Honeywell is barred from recovering damages from the Government under the "First Sale" Doctrine.

To facilitate a review of this Memorandum Opinion regarding the patent infringement defenses asserted in this case, the court has provided the following outline:

I. RELEVANT FACTUAL BACKGROUND AND PROCEDURAL HISTORY.

II. DISCUSSION.

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[1] On April 3, 2008, a pre-publication draft of the Memorandum Opinion was provided under seal to the parties. The parties were instructed to propose any redactions on or before April 14, 2008. On April 14, 2008, this Memorandum Opinion was published..

A. Jurisdiction And Standing.

B. The Court's Determination Regarding Scope And Content Of Prior Art.

1. The Parties' Agreement Regarding Certain Prior Art Relevant In This Case.

2. The Uchida And Stolov References Are Prior Art.

a. Claim Construction.

b. Comparison Of The Construed Claims Against The Prior Art.

i. "A display system"

ii. "for use in association with a light amplifying passive night vision aid"

iii. "and a local color display"

iv. "including a local source of light having blue, red, and green color bands"

v. "a first filter for filtering the blue band of the local source of light"

vi. "a second filter for filtering the green color band of the local source of light"

vii. "a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band"

viii. "a fourth filter which filters light at the night vision aid, said fourth filter cooperating with said plurality of filters to substantially block at least said narrowband of the red color band from being admitted to the night vision aid"

3. Obviousness.

a. Governing Precedent.

b. The Scope And Content Of The Prior Art.

c. The Level Of Ordinary Skill In The Art.

d. The Differences Between The Prior Art And Claims At Issue.

i. Comparison Of The Elements Of Claim 2 Of The '914 Parent With Prior Art.

(a) Claim 2 Preamble: "A Display System For Use In Association With A Light Amplifying Passive Night Vision Aid And A Local Color Display Including A Local

Source Of Light Having Blue, Red, And Green Color Bands."

(1) Uncontested Prior Art.

(2) TASK & GRIFFIN III AND KNIGHT & RITTER.

(3) GERMAN PATENT.

(b) Claims 2(a), 2(a)(1), 2(a)(2): "A Plurality of Filters At The Local Color Display including (1) A First Filter For Filtering The Blue Color Band Of The Local Source Of Light; (2) A Second Filter For Filtering The Green Color Band Of The Local Source Of Light."

(1) UCHIDA, STOLOV, and VERNEY.

(2) TASK ARTICLES.

(c) Claim 2(a)(3): "A Third Filter For Filtering The Red Color Band Of The Local Source Of Light And Passing A Narrowband Of The Red Color Band."

(1) TASK & GRIFFIN I AND KNIGHT & RITTER.

(2) BOEHM.

(3) GERMAN PATENT.

(4) SCOUGHTON.

(5) VERNEY.

(d) Claim 2(b): "A Fourth Filter Which Filters Light At The Night Vision Aid, Said Fourth Filter Cooperating With Said Plurality Of Filters To Substantially Block At Least Said Narrowband Of The Red Color Band From Being Admitted To The Night Vision Aid."

(1) BOEHM.

(2) TASK & GRIFFIN III.

(3) GERMAN PATENT.

(4) VERNEY.

ii. Considerations Of The '914 Patent As A Whole.

(a) Prior Art Combinations.

(1) The Parties' Arguments.

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(1) The Parties' Arguments.

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iii. Teaching Away.

c. Secondary Considerations.

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4. Defenses Set Forth In The First Paragraph Section 112 Of The Patent Act.

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5. Definiteness Defense Set Forth In The Second Paragraph Of Section 112 Of The Patent Act.

6. The "First Sale" Doctrine.

7. Inequitable Conduct.

8. Prosecution Laches.

III. CONCLUSION.

* * *

I. RELEVANT FACTUAL BACKGROUND AND PROCEDURAL HISTORY.[2] [3]

The United States military uses night vision goggles ("NVG") to assist pilots in operating rotary and fixed wing aircraft, because NVGs create a brighter night view of terrain outside the cockpit. *See Honeywell III*, 70 Fed. Cl. at 437-38. In addition, NVGs can amplify interior cockpit lights. *Id.* Dual amplification, however, can distort pilot vision by

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[2] Incorporated herein are four prior Memoranda Opinions of the court that provide an extensive discussion about the technology at issue in this patent case and the background of the patent at issue: *Honeywell Int'l, Inc.* v. *United States*, 65 Fed. Cl. 809 (2005) ("*Honeywell I*") (jurisdiction), *Honeywell Int'l, Inc.* v. *United States*, 66 Fed. Cl. 400 (2005) ("*Honeywell II*") (granting Lockheed Martin Corp. intervenor status and *Markman* proceedings to construe certain claims requested by the parties); *Honeywell Int'l, Inc.* v. *United States*, 70 Fed. Cl. 424 (2006) ("*Honeywell III*") (determining literal infringement, or alternatively, under the Doctrine of Equivalents as to claim 2 of the '914 Patent); and *Honeywell Int'l, Inc.* v. *United States*, 71 Fed. Cl. 759 (2006) ("*Honeywell IV*") (granting L-3 Communications Corp.'s Motion to Intervene). In addition, Honeywell's claims under the Invention Secrecy Act as subject to a separate Memorandum Opinion also issued on this date. *See Honeywell Int'l, Inc.* v. *United States*, __ Fed. Cl. __ (2008) ("*Honeywell V*") (Invention Secrecy Act).

[3] The procedural history of this case between December 18, 2002 and the June 14, 2005 Memorandum Opinion and Order is set forth in *Honeywell II*, 66 Fed. Cl. at 413-18. The procedural history of this case between June 14, 2005 and the April 28, 2006 Memorandum Opinion and Order is set forth in *Honeywell III*, 70 Fed. Cl. at 433-37.

interrupting NVG functionality. *Id.* Aviation Night Vision Imaging System ("ANVIS") goggles solved part of the distortion problem, because they were not sensitive to light with a visible wavelength below 580 nanometers ("nm"). *Id.* at 440. ANVIS also used "automatic gain control" to prevent intense light from overwhelming the sensors in the goggles. *Id.* In addition, automatic gain control reduced the intensity of all lights and the ability of pilots to see light outside, as well as inside, the cockpit. *Id.* Light with a wavelength above 580 nm, however, continued to limit the visible colors that could be used in the cockpit. *Id.* at 437-40. In the mid-1980's, Mr. Richard Cohen, an employee of Allied Signal Technologies, Inc. ("Allied Signal")[4], attempted to solve the problem of using red light and full-color displays in cockpits, together with NVGs. *Id.* On October 10, 1985, Allied Signal filed United States Patent Application Serial No. 06/786,269 ("the '269 Application"). *Id.* at 413-14, 444. On October 22, 2002, United States Patent No. 6,467,914 ("the '914 patent") was issued to Honeywell. *Id.*

On December 18, 2002, Honeywell International Inc. and Honeywell Intellectual

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[4] In 1985, Allied Corporation merged with Signal Companies and became Allied Signal Corporation. *See Honeywell*, 70 Fed. Cl. at 444. On December 16, 1999, Allied Signal Corporation merged with Honeywell International Inc. *Id.* As a result, Honeywell International Inc's subsidiary, Honeywell Intellectual Properties Inc., became the owner of the '269 Application. *Id.* A detailed discussion of the patent's ownership and Plaintiffs' corporate structure is found in *Honeywell III*, 70 Fed. Cl. at 444.

Properties Inc. (collectively hereafter "Honeywell") filed a Complaint in the United States Court of Federal Claims alleging that the United States ("the Government") violated: (1) the Invention Secrecy Act of 1951, 35 U.S.C. §§ 181-88, as a result of the Government's issuance of Secrecy Orders regarding U.S. Patent Application Serial No. 06/786,268 ("the '268 Application"); (2) the Fifth Amendment to the United States Constitution, as a result of the Government's taking of Honeywell's '914 patent and related '269 Application; (3) 28 U.S.C. § 1498(a), as a result of the unlicensed, or otherwise unlawful, use of the U.S. Patent No. 6,142,637 ("the '637 patent") and the '914 patent by or on behalf of the Government; and (4) the Fifth Amendment to the United States Constitution for the taking of the '637 and '914 patents for public use without just compensation. *See* Compl. ¶¶ 1, 53-75. ("Compl.").

On May 31, 2005, Honeywell filed an Amended Complaint ("Amend. Compl.") seeking recovery: "(a) under the Invention Secrecy Act of 1951, 35 U.S.C. §§181-88, by reason of the Government's issuance of a Secrecy Order with respect to [the '269 Application;] . . . (b) under 28 U.S.C. §1498(a), for the unlicensed (or otherwise unlawful) use of the . . . ['914 patent; and] . . . (c) under the Fifth Amendment [to the United States Constitution][5], for the Government's taking and use

[5] The December 18, 2002 Complaint alleged that the Government infringed the '268 Application and the '637 patent. Subsequently, Honeywell relinquished infringement claims regarding the '268 Application and '637 patent. *See* 12/23/04 Honeywell Brief at 1 n.1; *see also* 5/13/05 Honeywell Mot.

of Honeywell's patent rights associated with '269 patent application and '914 patent . . . for public use without just compensation to Honeywell." *See* Amend. Compl. ¶ 1.[6]

On April 28, 2006, the court issued a Memorandum Opinion and Order determining that Honeywell established a *prima facie* case of literal infringement as to claim 2 of the ' 914 patent or, in the alternative, under the Doctrine of Equivalents. *See Honeywell III*, 70 Fed. Cl. at 424

From July 24-27, 2006 the court held a hearing on the Invention Secrecy Act. *See* SA TR 1-1079. On November 13-15, 2006 and December 11-15, 2006, the court held a hearing on defenses asserted by the Government and/or Defendant-Intervenors. *See* TR at 1-840[7]

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[6] On June 14, 2006, Honeywell filed a Motion for Entry of A Stipulated Order Dismissing Count III of the Amended Complaint, in light of the United States Court of Appeals for the Federal Circuit's decision in *Zoltek Corp.* v. *United States*, 442 F.3d 1345, 1353 (Fed. Cir. 2006) (holding that patent infringement claims cannot be asserted as a Fifth Amendment taking under the Tucker Act). On June 15, 2006, the court entered an order dismissing Count III of Honeywell's Amended Complaint, subject to the United States Supreme Court's consideration of a petition for certiorari. On June 11, 2007, the petition was denied. *See Zoltek Corp.* v. *United States*, 127 S. Ct. 1236 (June 11, 2007). Accordingly, Count III of the Amended Complaint is dismissed, with prejudice.

[7] The Government and Defendant-Intervenors' witnesses at the evidentiary hearing on defenses were: Mr. Charles Edward Bradford, Electronics Engineer, Night-Vision and Electronic Sensors Directorate, Fort Belvior, Virginia (TR 119-211); Mr.

On August 24, 2007, Defendant-Intervenor

William Dunn, President and CEO, Manufacturing Resources International (TR 213-330); Mr. Ferdinand Reetz, III, Lead Engineer, C130 Program, Naval Air Warfare Center, Patuxent River, Maryland (TR 330-502); and Dr. Harry Lee Task, Independent Consultant, Former Senior Scientist for Human Systems Interface, Air Force Research Laboratory (TR 503-838, 2341-48, 2756-83).

Honeywell's witnesses were: Colonel William S. Lawrence, United States Marine Corps (Retired) (TR 937-1038, 1511-13, 1920-57); and Mr. Lawrence E. Tannas, Consultant, Tannas Electronic Displays, Inc. (TR 1048-1510).

The court determined during the *Markman* proceeding that Mr. Tannas met the qualifications of Fed. R. Ev. 702-03. *See Honeywell II*, 66 Fed. Cl. at 416. A discussion of Mr. Tannas's impressive credentials also is discussed therein. In addition, the court determined that Dr. Harry Lee Task met the qualifications of Fed. R. Ev. 702-03. *Id.* at 417. A discussion of Dr. Task's equally impressive credentials also is discussed therein. *Id.*

Three additional experts appeared during the evidentiary hearing on defenses. Mr. Bradford has worked with NVGs as a technician and engineer since 1972. *See* TR 119-21. The court has determined that Mr. Bradford met the qualifications of Fed. R. Ev. 702-03. Mr. Dunn has a Bachelor of Science in Electrical Engineering and has worked as an engineer since 1973. *See* TR 213-17. The court has determined that Mr. Dunn met the qualifications of Fed. R. Ev. 702-03. In addition, Colonel William S. Lawrence, United States Marine Corps (Retired) also was an expert witness for Honeywell. *See* PTX 1352 at 1. Col. Lawrence has over 26 years of experience as a U.S. Marine Corps pilot in both rotary and fixed wing aircraft. *Id.* Col. Lawrence has flown with NVGs and has worked on cockpit display systems. *Id.* The court has determined that Col. Lawrence met the qualifications of Fed. R. Ev. 702-03.

On February 27-March 2, 2007, the court held a trial on potential damages.

Lockheed Martin Corp. ("Lockheed Martin") filed a Post-Trial Memorandum Regarding Defenses to Infringement and the Government filed a Post-Trial Brief on Defenses to Infringement[8] ("Gov't PT Def"). On the same date, Defendant-Intervenor L-3 Communications Corp. ("L-3") filed a Post-Trial Brief Regarding Defenses ("L-3 PT Def").

On October 12, 2007, Honeywell filed a Corrected Post-Trial Opposition Brief Regarding Defenses ("Pl PT Op Def").

On November 2, 2007, Honeywell filed a Post-Trial Brief Regarding Damages. On November 9, 2007, L-3 filed a Reply to Honeywell's Post-Trial Opposition Brief Regarding Defenses ("L-3 Def Reply"). On November 10, 2007, the Government filed a Reply ("Gov't Def Reply") and a Motion to Strike Portions of Honeywell's Opposition Brief or, in the Alternative, Cross-Motion to Strike the Government's New Obviousness Defense Based Upon [Prior Art] VERNEY (DE-511) ("Gov't Mot. to Strike"). On November 13, 2007, the Government filed a Motion for Leave to File Corrected Post-Trial Reply Brief. On November 26, 2007, Honeywell filed a Response to the Government's November 10, 2007 Motion.

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[8] In the Post-Trial Memorandum Regarding Defenses to Infringement, Lockheed adopted the "Government's and L-3's Post-Trial Memorandum Regarding Defenses to Infringement."

On December 7, 2007, the Government filed a Reply in Support of Its Motion to Strike ("Gov't Mot. to Strike Reply"). On December 18, 2007, Honeywell filed a Reply in Support of a Cross-Motion to Strike the Government's New Obviousness Defense Based On VERNEY Alone.

II. DISCUSSION.

A. Jurisdiction And Standing.

The United States Court of Federal Claims has jurisdiction to adjudicate claims that allege "an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same . . . [seeking] recovery of . . . reasonable and entire compensation for such use and manufacture." 28 U.S.C. § 1498(a). Previously, the court determined that Honeywell properly alleged jurisdiction. *See Honeywell II*, 66 Fed. Cl. at 419-20; *see also Honeywell III*, 70 Fed. Cl. at 446.

In addition, the court previously determined that Honeywell has standing to assert claims of infringement. *See Honeywell II*, 66 Fed. Cl. at 420; *see also Honeywell III*, 70 Fed. Cl. at 446. Likewise, the court has determined that Lockheed Martin and L-3 have standing to intervene in this case, as a matter of right, pursuant to RCFC 24(a). *See Honeywell II*, 66 Fed. Cl. at 421 (regarding Lockheed Martin); *Honeywell III*, 70 Fed. Cl. at 446 (regarding Lockheed Martin); *Honeywell IV*, 71 Fed. Cl. at 767 (regarding L-3).

B. The Court's Determination Regarding Scope And Content Of Prior Art.

The Government initially presented twenty-five prior art references and continues to assert nineteen.[9] *See* DE 500 at ii-iii (Task Direct); Gov't PT Def at 8-10; *see also* TR 719 (asserting DE 301, 504-06, 510, 515, 517, 519, 521 and DMX 4 are within the scope and content of the relevant art).

1. The Parties' Agreement Regarding Certain Prior Art Relevant In This Case.

The parties agree that the following sixteen references are prior art:

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[9] Five of the Government's initial prior art references have been withdrawn: BREITMAIER AND REETZ (DE 146); BERTELSON (DE 516); AERONAUTICAL DESIGN STANDARD (DE 517); TA-7C REPORT (DE 324); and PIEROWAY II (DE 520). *See* Gov't PT Def at 10 n.1.

The Government, however, argues that these references remain relevant to determine the level of skill in the art. *Id.* (citing *Thomas & Betts Corp.* v. *Litton Sys. Inc.*, 720 F.2d 1572, 1580-81 (Fed. Cir. 1983) ("[T]he [evidence], though not technically prior art, [was], in effect, properly used as indicators of the level of ordinary skill in the art to which the invention pertained.") (citations omitted); *see also Lockheed Aircraft Corp.* v. *United States*, 553 F.2d 69, 78 (Ct. Cl. 1977) ("It is clear that these reports . . . are not prior art within the meaning of 35 U.S.C. §§ 102 or 103 . . . [n]evertheless, such classified reports are indicative of the general level of skill in the art.") (citations omitted).

- U.S. Patent No. 4,515,442, entitled Optical Filter Device, issued May 7, 1985 ("the '442 patent") (DE 501);

- U.S. Patent No. 4,245,242, entitled Contrast Enhancement of Multicolor Displays, issued January 13, 1981 ("the '242 patent") (DE 502);

- U.S. Patent No. 4,663,562, entitled Contrast Enhancement Structure for Color Cathode Ray Tube, issued May 5, 1987 ("the '562 patent") (DE 503);

- U.S. Patent No. 4,219,843, entitled Projection Type Color Television System, issued August 26, 1980 ("the '843 patent") (DE 518);

- The Night Vision Goggle Compatible Helicopter Cockpit, H.D.V. Boehm, Tenth European Rotorcraft Forum, August 28-31, 1984, The Hague, The Netherlands, pp. 40-1-40-26 ("BOEHM") (DMX 4);

- Aircraft Night Lighting Systems, Maj. Chesley S. Pieroway, Business Aircraft Meeting & Exposition, April 12-15, 1983, Wichita, Kansas, SAE Technical Paper Series #830713, pp. 1-4 ("PIEROWAY I") (DE 512);

- Helicopter Cockpit Avionics Development or the Advanced Transport and Next Generation Aircraft, Craig Scoughton, Robert Johnston, and Richard Cohen, presented at the National Specialists Meeting on Advanced Cockpit Design by the American Helicopter Society,

Grapevine, Texas, October 3-4, 1984 ("SCOUGHTON") (DE 522);

- Helicopter Cockpit Design for Night Goggle Compatibility, G.F.H. Lloyd, Paper No. 64, presented at Sixth European Rotorcraft and Powered Lift Aircraft Forum, Bristol, England, September 16-19, 1980 ("LLOYD") (DE 521);

- Electroluminescent Lighting and Other Techniques for Improving Night Vision Goggles Compatibility with Cockpit Displays, H. L. Task and L.L. Griffin, AGARD (Advanced Group For Aerospace Research & Development), Conference Proceedings No. 329, Advanced Avionics and The Military Aircraft Man/Machine Interface, 1982, Blackpool, UK, NTIS No. AGARD-CP-329), pp. 29-1-29-6 ("TASK & GRIFFIN I") (DE 506);

- Pave Low III: Interior Lighting Reconfiguration for Night Lighting and Night Vision Goggle Compatibility, H.L. Task & L.L. Griffin, Aviation Psychology III: Aviation, Space, and Environmental Medicine, December 1982, AFAMRL-TR-82-3, pp. 1162-65 ("TASK & GRIFFIN II") (DE 507);

- Hughes Helicopters AH-64A Electroluminescent Lighting, Tom C. Knight and James E. Ritter, presented at the National Specialists Meeting on Advanced Cockpit Design by the American Helicopter Society, Grapevine, Texas, October 3-4, 1984

("KNIGHT AND RITTER") (DE 513);

- Aircraft Lighting Systems, Jay F. Verney, American Helicopter Society, 41st Annual Forum Proceedings, May 15-17, 1985, Ft. Worth, Texas, pp. 111-12 ("VERNEY") (DE 511);

- Overview of Advanced Display Technologies, J. Robert Trimmier, presented at the National Specialists Meeting on Advanced Cockpit Design by the American Helicopter Society, Grapevine, Texas, October 3-4, 1984 ("TRIMMIER") (DE 514);

- German Patent Application, published as DE 33 13 899 Al, on October 18, 1984 and translation ("GERMAN PATENT") (DE 504, 505);

- Night Vision Goggle Compatibility, What Is It And How Do We Get It? And Other AFAMRL NVG Efforts, H. Lee Task ("TASK IV") (DE 509, 510); and

- Pave Low III: Interior Lighting Reconfiguration For Night Lighting And Night Vision Goggles, H.L. Task and L.L. Griffin ("TASK & GRIFFIN III") (DE 508).

2. The UCHIDA[10] And STOLOV[11] References Are Prior Art.

Honeywell argues that the liquid crystal display ("LCD") technology in UCHIDA (DE 515) and STOLOV (DE 519) are not analogous, as they are not within the same field of endeavor as the '914 patent and do not relate to "aircraft cockpits or NVG compatibility[.]" *See* Pl PT Op Def at 14. Moreover, the court would have to engage in "hindsight," if it considered UCHIDA and STOLOV. *Id.*

Intervenor L-3 counters that the LCD technology in UCHIDA is in the same field of endeavor as the '914 patent, because that field is not limited to aircraft cockpits. *See* L-3 PT Def at 22-23 ("Indeed, neither 'aircraft' nor 'cockpit' is ever used in [c]laim 2."). Other prior art references, however, directly "suggest[] the use of CRTs and LCDs . . . in aircraft cockpits." *Id.* at 23 (citing DE 514 at GVT018-1662; DMX 4 ("BOEHM") at D000587, D000606; DE 511 ("VERNEY") at GVT009-0782). Even if LCDs are not in the same field of endeavor, UCHIDA and STOLOV are "reasonably pertinent" to NVG compatibility with full color displays. *Id.* at 22-23 (citing *In re Icon Health & Fitness, Inc.*, 496 F.3d 1374, 1379-1380 (Fed. Cir. 2007) (bed springs were "reasonably

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[10] A Liquid Crystal Multicolor Display Using Color Filters, Tatsuo UCHIDA, presented at Eurodisplay 1981, September 16-18, 1981 ("UCHIDA") (DE 515).

[11] U.S. Patent No. 4,368,963, entitled Multicolor Image or Picture Projection System Using Electronically Controlled Slides issued January 18, 1983 ("STOLOV") (DE 519).

pertinent" to problems faced in treadmill art)); *see also* Gov't Def Reply at 6 ("UCHIDA'S full color displays are sufficiently close to the problem of the '914 patent to be considered.") (citation omitted).

The United States Court of Appeals for the Federal Circuit requires trial courts to analyze two factors in determining whether prior art is analogous: "(1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992) (citations omitted). The determination of relevant prior art is a question of fact. *Id.* at 658 ("Whether a reference in the prior art is 'analogous' is a fact question.").

Claim 2 of the '914 patent preamble describes the invention as: "A *display system* for use in association with a light amplifying passive night vision aid and a *local color display* including a local source of light[.]" *See* DMX 36 at D000650 ('914 patent, col. 5, ll. 31-33, col. 6, ll. 11-13) (emphasis added). Therefore, the field of endeavor is not limited to a NVG compatible display system that could be used in aircraft cockpits. UCHIDA discloses a "liquid crystal multicolor *display*" and that LCDs, as of 1981, "increasingly [were] being used in displays for portable instruments." DE 515 at GVT009-0486 (emphasis added). Likewise, STOLOV is a "picture system includ[ing] a flat screen, on which is projected pictures from three small liquid crystal display panels[.]" *See* DE 519 at 1. Therefore, the court has determined that UCHIDA and STOLOV

describe color display systems that could be used in aircraft cockpits and are in the same field of endeavor as the '914 patent. *See In re Clay*, 966 F.2d at 658-69.

Assuming, *arguendo*, that UCHIDA and STOLOV were not in the same field of endeavor as the '914 patent, they would be "analogous art," because they are "reasonably pertinent" to the type of display system described in the '914 patent. A reference is analogous art if "even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *Id.* at 659; *see also KSR Int'l Co.* v. *Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007) ("*KSR*") ("[F]amiliar items may have obvious uses beyond their primary purposes."); *In re Paulsen*, 30 F.3d 1475, 1481-82 (Fed. Cir. 1994) (determining that housings, hinges, laches, and springs found in items like a piano lid and kitchen cabinet were reasonably pertinent to the development of a latch system for personal computers); *In re Icon*, 496 F.3d at 1379-80 (determining that springs used in a folding bed were reasonably pertinent to an inventor developing a treadmill with a folding mechanism).

In this case, the '914 patent describes a "display system" compatible with NVGs. *See* DMX 36 at D000650 ('914 patent, col. 5, ll. 31-33, col. 6, ll. 11-13). The '914 patent describes the problem to be solved as a full color display compatible with NVGs, but does not require that such display systems be used in aircraft cockpits. *Id.* Therefore, the court has determined that UCHIDA and STOLOV, as displays that may be used in aircraft cockpits, are analogous

prior art.

3. The REETZ THESIS Reference Is Not Prior Art.

Sections 102(a) and (b) of the Patent Act precludes issuance of a patent if:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States[.]

35 U.S.C. § 102(a), (b).

The party claiming prior art must show by clear and convincing evidence that the invention at issue existed prior to the date of the patent application in the United States. *See In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986) ("The proponent of the publication bar must show that prior to the critical date the reference was sufficiently accessible[.]") (citations omitted); *see also Norian Corp.* v. *Stryker Corp.*, 363 F.3d 1321, 1330 (Fed. Cir. 2004) (affirming a trial court's determination that "there was not clear and convincing evidence that the Abstract was actually available at the IADR

meeting.") (citations omitted). Accordingly, the court must make the prior art determination on a case-by-case basis. *See In re Hall*, 781 F.2d at 899 ("The § 102 publication bar is a legal determination based on underlying fact issues[.]").

In this case, the Government and Defendant-Intervenors argue that the United States Court of Appeals for the Federal Circuit requires only "competent evidence of the general library practice . . . to establish an approximate time when a thesis [becomes] available." *See* Gov't Def Reply at 29 (citing *In re Hall*, 781 F.2d at 899); *see also* L-3 PT Def at 15 n.8 ("Evidence of the typical procedures for indexing theses in the library where the particular reference was found is sufficient to establish a date of public availability.") (citing *In re Hall*, 781 F.2d at 899). The Government and Defendant-Intervenors concede that no evidence establishes the actual date of shelving and indexing of the REETZ THESIS. *See* Gov't PT Def at 11 ("Though information as to the actual date of shelving and indexing of the thesis was requested from Penn State, the library was unable to furnish this information."). Therefore, the Government and Defendant-Intervenors rely on the testimony of Mr. Reetz, Dr. Fidishun[12], and Ms. Wiant[13] to establish the public availability of the

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[12] Dr. Fidishun is the Head Librarian at the Great Valley School of Graduate Professional Studies and a tenured faculty member at the Penn State University library system. *See* DE 668 at 5 (Fidishun).

[13] Ms. Wiant worked as a Library Assistant at the King of Prussia Graduate Center (now the Great Valley School of

REETZ THESIS. *See* Gov't Def Reply at 29-30. At trial, it was established that the REETZ THESIS was signed on July 5, 1983, by the Assistant Dean of the Penn State Graduate School. *See* DE 670 at PS-0042. It was also established that it was library practice to catalog and shelve a masters thesis within three months after being signed. *See* Gov't PT Def at 12 (citing DE 668 at 26- 28, 41-43 (Fidishun) (testifying that a thesis would be cataloged and shelved "usually . . . within a month, month and a half at the most, I would say outside three months[.]")); *see also* DE 688 at 23 (Wiant) ("The longest it would take would be a month."). In addition, it was established that bindings and markings on the REETZ THESIS were consistent with bindings and markings on other masters theses from 1983 to 1985. *See* Gov't PT Def at 12 (citing DE 688 at 15-16, 30-31, 40-41). Therefore, the Government argues this collective testimony established that the REETZ THESIS would have been cataloged and shelved no later than October 1983. *Id.* at 11-13 ("[T]he Reetz [M]asters [T]hesis would have been shelved and cataloged in the satellite Penn State Library no later than October 1983.").

Honeywell counters that the documentary evidence establishes that the REETZ THESIS first was cataloged on November 5, 1985, because in 1983, the Penn State Great Valley Library used a computerized library catalog system, called the Library Information Access System ("LIAS"), that

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Graduate Professional Studies) from September 1964 to June 2004. *See* DE 688 at 8,11 (Wiant).

used machine-readable cataloging records ("MARC records"). *See* Pl PT Op Def at 110 (citing DE 668 at 50-51, 142-43, 150-51 (Fidishun); DE 679 (Carson Article) (discussing instillation of LIAS); DE 684 (Academic Computing Newsletter)). Dr. Fidishun also testified that the earliest record of the REETZ THESIS being cataloged and shelved in the library was November 5, 1985:

DR. FIDISHUN: No. [DF-18 is] the MARC record for the Reetz thesis.
HONEYWELL COUNSEL: You would agree with me . . . that this MARC record was created 851105?
DR. FIDISHUN: Right.
HONEYWELL COUNSEL: So that's 1985 November 5 –
DR. FIDISHUN: Right.
* * *
HONEYWELL COUNSEL: And that date, November 05, '85, is the earliest date that there's any documentary record anywhere at Penn State that this existed?
DR. FIDISHUN: Yeah. I mean –
HONEYWELL COUNSEL: Not even on the shelf but just flat-out existed?
DR. FIDISHUN: As far as I can see, yeah. I haven't seen anything listed to indicate otherwise.

DE 668 at 193-94.

For these reasons, the court has determined that Honeywell established that the November 5, 1985 MARC date is consistent with the check-out card that was first stamped on November 7, 1985. *See* Pl PT Op Def at 111 (citing DE 688 at 36

(establishing that the first date stamped on the card was November 7, 1985)). Neither Dr. Fidishun nor Ms. Wiant had any personal knowledge about the REETZ THESIS. *Id.* at 112-13; *see also* DE 668 at 195-96 (Fidishun) (HONEYWELL COUNSEL: "Again, you have no personal knowledge about what happened in 1983, '84, '85; isn't that so?" DR. FIDISHUN: "That's true. I'm just saying from what I heard and what I was told."); *see also* DE 688 at 104-5 (Wiant) (admitting that she had no personal knowledge about the shelving of the REETZ THESIS).

Honeywell further argues that the Government and Defendant-Intervenors have not presented any evidence as to when the REETZ THESIS was provided to the library. *See* Pl PT Op Def at 116 ("The Government introduced no testimony from Mr. Reetz, his advisors, the engineering department or anyone else [to demonstrate when the library received the thesis]."); *see also* DE 688 at 105 (Wiant) (HONEYWELL COUNSEL: "To say it probably was, you're assuming that [the REETZ THESIS] was provided by the office-" MS. WIANT: "Exactly[.]" HONEYWELL COUNSEL: "– administration office?" MS. WIANT: "Right."). Therefore, even though the Government established that library practice was to catalog and shelve a thesis within one month after it was received, this is not determinative of when the REETZ THESIS was received. *See* Pl PT Op Def at 116 ("Here, without a shred of evidence regarding when the [REETZ THESIS] was provided to the library, there is no starting point from which to apply such estimates.").

The court agrees that "competent evidence of the general library practice" may be used to "establish an approximate time when a thesis became available." *In re Hall*, 781 F.2d at 898-99 ("The Library copies of the Foldi dissertation were sent to us by the faculty on November 4, 1977. Accordingly, the dissertation most probably was available for general use toward the beginning of the month of December, 1977."). In this case, however, the evidence proffered by the Government and Defendant-Intervenors did not establish when the REETZ THESIS was provided to the Great Valley Library. *Id.* Therefore, even if the Government and Defendant-Intervenors established by clear and convincing evidence that the REETZ THESIS was cataloged and shelved within three months after being sent to the Great Valley Library, no evidence was adduced to establish the date of receipt that triggered the three-month calculation. In addition, the Government and Defendant-Intervenors have not established by clear and convincing evidence any practice regarding the delivery or availability, either in general or specific to the REETZ THESIS. *See* Gov't PT Def at 10-13; *see also* Gov't Def Reply at 28-32; L-3 PT Def at 15 n.8; L-3 Def Reply at 9 n.6. Dr. Fidishun's testimony as to when a thesis would be received by the library solely was based on hearsay:

> Basically, what happens is this. And it has been the same as long as anybody knows, *from everything I've been told.* The student completes the thesis, and at whatever date they complete the thesis, their advisor and/or department head signs off on the thesis. At that point [the students] bring

> right now usually just one copy [to the library].

DE 668 at 22 (Fidishun) (emphasis added).

Ms. Wiant, however, testified:

> GOVERNMENT COUNSEL: A student would bring in a copy of his or her thesis to the library?
> MS. WIANT: No. The thesis would be handed in and it would be signed by the faculty member who was the advisor, and they had been cleared for graduation, that all their course work and everything was completed. Then the thesis would be brought down to the library to be cataloged and shelved.

DE 686 at 12 (Wiant); *see also* DE 689 (Wiant Affidavit) ("After a [student's] thesis was approved by the student's adviser(s), the thesis was submitted to the University's library[.]").

Ms. Wiant's testimony, however, established only that the student's Advisor or a member of the Advisor's staff typically submitted the student's thesis to the library, which conflicts with Dr. Fidishun's testimony as to when the library would receive a thesis for cataloging and shelving in the 1980s. Based on this inconsistency and the lack of any definitive evidence regarding when the REETZ THESIS actually was received by the Great Valley Library, the court has determined that the Government and Defendant-Intervenors did not establish by clear and convincing evidence that the REETZ THESIS was available to the public before October 10, 1985.

This case is distinct from *In re Hall*, where the opposing party did not proffer any evidence to rebut the applicant's use of general library practices. *See In re Hall*, 781 F.2d at 899 ("Moreover, it is undisputed that appellant proffered no rebuttal evidence."). In this case, Dr. Fidishun admitted that the first documented evidence of the REETZ THESIS being publically available was not until November 5, 1985. *See* DE 668 at 194-95 (Fidishun); *see also* DE 688 at 36 (Wiant) (confirming the first date stamped on the check-out card was November 7, 1985). Therefore, the Government and Defendant-Intervenors' reliance on general library practices does not establish by clear and convincing evidence the public availability of the REETZ THESIS.

Because the Government and Defendant-Intervenors have not established that the REETZ THESIS was publically available before October 10, 1985, as a matter of law, it cannot be considered prior art. *See* 35 U.S.C. § 102; *see also* DMX 36 at D000001 ('269 Application filed October 10, 1985).

C. Defenses Asserted By The Government And Defendant-Intervenors.

1. Validity.

Section 282 of the Patent Act states that:

> *A patent shall be presumed valid. Each claim of a patent* (whether in independent, dependent, or multiple dependent form) *shall be presumed valid* independently of the

> validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

35 U.S.C. § 282 (emphasis added).[14]

Accordingly, the United States Court of Appeals for the Federal Circuit has held that the defendant bears the burden of demonstrating invalidity by clear and convincing evidence. *See Norian Corp*, 363 F.3d at 1326 ("The jury was correctly instructed that a party seeking to invalidate a patent must do so by clear and convincing evidence.") (citation omitted); *see also AK Steel Corp.* v. *Sollac & Ugine*, 344 F.3d 1234, 1238-39 (Fed. Cir. 2003) (citations omitted) ("[B]ecause a patent is presumed to be valid . . . the evidentiary burden to show facts supporting a conclusion of invalidity is one of clear and convincing evidence.").

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[14] This presumption has been discussed by federal courts "in connection with the nonobviousness condition for patentability[.]" CHISUM ON PATENTS § 19.02, 19-10 (2007) (citation omitted). The presumption of validity, however, "is applicable to all of the many bases for challenging a patent's validity." *Panduit Corp.* v. *Dennison Mfg. Co.*, 810 F.2d 1561, 1570 (Fed. Cir. 1987) ("*Dennison*"). Such "bases" include: utility; definiteness; enablement; best mode; written description; anticipation; and obviousness. *See* Alan L. Durham, PATENT LAW ESSENTIALS 67-126 (2d ed. 2004).

The Government and Defendant-Intervenors acknowledge that the clear and convincing standard applies, but argue that "the presumption of validity *may be diminished* when it appears the Patent and Trademark Office [("PTO")] *failed to . . . review the patent and the prior art*." L-3 PT Def at 52 (emphasis added); *see also* Gov't PT Def at 15-16 (re: same).

In *KSR*, the United States Supreme Court, however, did not directly address whether the presumption of validity may be affected when all relevant prior art was not considered by the Patent Examiner. *See KSR*, 127 S. Ct. at 1745 ("We need not reach the question whether the failure to disclose [prior art] during the prosecution of [the patent at issue] voids the presumption of validity given to issued patents, for [the] claim . . . is obvious despite the presumption."). Therefore, clear and convincing evidence remains the governing evidentiary standard for conducting an obviousness inquiry. *Id.*; *see also Lindemann Maschinenfabrik GMBH* v. *American Hoist and Derrick Co.*, 730 F.2d 1452, 1459 (Fed. Cir. 1984) ("*Lindemann*") ("Because the mere introduction of non-considered art (a common phenomenon) does not 'weaken' or otherwise affect the presumption, there is no basis for adjusting the required level of proof downward to a 'mere preponderance.'"); *Solder Removal Co.* v. *U.S. Int'l. Trade Comm'n*, 582 F.2d 628, 632 (CCPA 1978) ("The ALJ's conclusion, that the statutory presumption of validity . . . does not exist when the most pertinent prior art was neither presented to nor considered by the PTO, is unsound.").

Nevertheless, the Patent Examiner's review of the prior art is relevant, because the clear and convincing standard may be more easily met when prior art was not considered. *See Lindemann*, 730 F.2d at 1459 ("[T]he clear and convincing standard may more easily be met when such non-considered art is more pertinent than the cited art[.]") (citations omitted); *see also Solder Removal Co.*, 582 F.2d at 632 ("[R]ebuttal of the presumption of patent validity may be more easily and more often achieved in reliance on prior art more pertinent than that considered by the examiner[.]").

In this case, the Government and Defendant-Intervenors contend that the following prior art[15] was never presented to the Patent Examiner: GERMAN PATENT (DE 505);[16] TRIMMIER (DE 514); UCHIDA (DE 515); and STOLOV (DE 519). *See* L-3 PT Def at 52-53; *see also* Gov't PT Def at 10. The Government and Defendant-Intervenors also contend that the Patent Examiner accorded the prior art only a "cursory review." *See* L-3 PT Def at 53; *see also* Gov't PT Def at 16 (arguing that the examiner reviewed over 100 pages of prior art in less than an afternoon). In addition, L-3 argues that the Patent Examiner analyzed the '914 patent under the more

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[15] A complete list of all the relevant prior art in this case is set forth herein. *See* Section II.B. 1, 2.

[16] L-3 clarifies that the German language version of the GERMAN PATENT (DE 504) was presented to the Patent Examiner, but no English translation was provided, so that the GERMAN PATENT in effect was undisclosed. *See* L-3 PT Reply at 50.

rigid "Teaching, Suggestion, or Motivation" ("TSM") test rejected by *KSR*. *See* L-3 PT Reply at 50 ("As evidence of *KSR*'s importance, the Patent and Trademark Office has issued new regulations for examiners to evaluate obviousness in patent applications.").

Honeywell does not dispute that TRIMMIER, UCHIDA, and STOLOV were not considered by the Patent Examiner. *See* Pl PT Op Def at 92-93. Honeywell also does not dispute that the English translation of the GERMAN PATENT was not considered by the Patent Examiner. *Id.* at 93 (citing DE 504). Honeywell insists, however, that the Patent Examiner reviewed the most pertinent prior art concerning complementary filtering and full color displays. *Id.* at 92 (stating that BOEHM, TASK & GRIFFIN III, BREITMAIER & REETZ, and the GERMAN PATENT, regarding complementary filtering, were disclosed to the Patent Examiner); *see also id.* at 93 (stating that DMX 4 and DE 146, disclosing full color displays also were presented to the Patent Examiner). Therefore, the Patent Examiner gave full consideration to the prior art. *Id.* at 94 (citing DMX-38 at D001534 (PTO Form 1449)) ("Examiner Buczinski represented that he considered that prior art on three separate occasions: on January 16, 2002 and January 24, 2002 during prosecution of the '760 application and again on June 25, 2002 during prosecution of the '269 application."); *see also id.* at D001705; DMX-36 at D000521, DE-1558 (PTO Form 1449).

The only version of the GERMAN PATENT provided to the PTO was not translated into English.

See DMX 36 at D000376-387 (including DE 504). The United States Court of Appeals for the Federal Circuit has not held directly whether untranslated foreign prior art is disclosed to the Patent Examiner. A partially untranslated prior art reference, when translated, however, "would have provided a 'good blueprint' for making the exact device described by the [patent-in-suit]." *See Semiconductor Energy Lab. Co.*, v. *Samsung Elecs. Co.*, 204 F.3d 1368, 1374 (Fed. Cir. 2000) (together with other prior art, the "[translated] Canon reference would have rendered obvious the asserted claims of the [patent-in-suit]."). There is no evidence in this record that the Patent Examiner otherwise considered a translated version of the GERMAN PATENT. *See* DMX 36 (including only DE 504 in German). Therefore, the court has determined that the GERMAN PATENT was not properly disclosed as prior art. As our appellate court has observed, "[a] withheld reference may be highly material when it discloses a more complete combination of relevant features, even if those features are before the patent examiner in other references." *See Semiconductor Energy Lab. Co.*, 204 F.3d at 1374 (citation omitted). Therefore, even though Honeywell may have disclosed other prior art that demonstrates similar concepts, the GERMAN PATENT would have provided the Patent Examiner with a "more complete combination of the relevant features." *Id.* The court acknowledges the logic in the Government's argument that, because the Patent Examiner reviewed the '914 patent under the TSM test, the presumption of validity should be afforded less weight in light of *KSR*. The Government and Defendant-Intervenors, however, have not cited any case law to support changing this established

presumption. Moreover, the United States Supreme Court has concluded that the TSM test provides "helpful insight;" it was only the "rigid and mandatory" application of the TSM test that was rejected. *See KSR*, 127 S. Ct. at 1731. Accordingly, the court declines to afford the presumption of validity any lesser weight in this case. The ultimate validity determination of claims of the '914 patent, however, requires a complete analysis of other asserted defenses.

2. Anticipation.

Section 102 of the Patent Act states that a patent is invalid for lack of novelty if:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States[.]

35 U.S.C. § 102(a), (b).

To anticipate a claim, a single prior art reference must: include each and every element of the claimed invention; enable; and describe the claimed invention sufficiently to have placed it in

possession of a person of ordinary skill in the field of invention. *See Helifix Ltd.* v. *Blok-Lok, Ltd.*, 208 F.3d 1339, 1346 (2000) (quoting *In re Paulson*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994)). Analogous elements in a reference and references that are in close proximity to the claimed invention should not be considered by the court determining novelty. *See* MARTIN J. ADELMAN, CASES AND MATERIAL ON PATENT LAW 168 (2d ed. 2003) ("ADELMAN") ("[E]lements that are analogous to the disclosure of a reference [may not] be considered. . . . A prior art rejection may still occur based on the proximity of a single piece of prior art to a claimed invention, but this inquiry is cast in terms of § 103 and nonobviousness.").

A claimed element that is not explicitly disclosed in prior art may be found, if it is inherently disclosed. *See Continental Can Co. USA* v. *Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (holding that a prior art reference inherently anticipates when "missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill."). In *Schering Corp.* v. *Geneva Pharms., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003), however, the United States Court of Appeals for the Federal Circuit clarified that *Continental Can* does not stand for the proposition that an inherent feature of a prior art reference must be perceived as such by a person of ordinary skill in the art before the critical date." Therefore, subject matter may be inherently disclosed by analyzing the prior art through the eyes of one of ordinary skill in the art and considering other evidence about the meaning of the prior art. *Id.* at 1377-78 ("Read in context, *Continental Can* stands

for the proposition that inherency, like anticipation itself, requires a determination of the meaning of the prior art. Thus, a court may consult artisans of ordinary skill to ascertain their understanding about subject matter disclosed by the prior art, including features inherent in the prior art. A court may resolve factual questions about the subject matter in the prior art by examining the reference through the eyes of a person of ordinary skill in art, among other sources of evidence about the meaning of the prior art. Thus, in *Continental Can*, this court did not require past recognition of the inherent feature, but only allowed recourse to opinions of skilled artisans to determine the scope of the prior art reference.").

Accordingly, a limitation is not inherently disclosed, if there is only a mere possibility or probability that it is inherent in the reference. *See In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A. 1981) ("Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. . . . If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to be well settled that the disclosure should be regarded as sufficient.").

Anticipation analysis entails two steps: claim construction and a comparison of the construed claims against the prior art reference. *See Key Pharms.* v. *Hercon Labs. Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998) ("[N]ot unlike a determination of infringement, a determination of anticipation . . .

involves two steps. First is construing the claim, a question of law for the court, followed by, in the case of anticipation or obviousness, a comparison of the construed claim to the prior art."). Anticipating a claim in prior art is a finding of fact. *See Titanium Metals Corp.* v. *Banner*, 778 F.2d 775, 780 (Fed. Cir. 1985) ("We have held that anticipation is a finding of fact, reviewable under the 'clearly erroneous' standard[.]").

a. Claim Construction.

In this case, claim 2 of the '914 patent describes:

> A display system for use in association with a light amplifying passive night vision aid and a local color display including a local source of light having blue, red, and green color bands,[17] comprising:
> (a) a plurality of filters at the local color display including (1) a first filter for filtering the blue color band of the local source of light; (2) a second filter for filtering the green color band of the local source of light; and (3) a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band; and

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[17] The court has previously determined that the preamble is "necessary to understanding the '*914 patent* and therefore as a limitation thereof." *Honeywell II*, 66 Fed. Cl. at 436 (citation omitted) (emphasis in original).

(b) a fourth filter which filters light at the night vision aid, said fourth filter cooperating with said plurality of filters to substantially block at least said narrowband of the red color band from being admitted to the night vision aid.

DMX 36 at DE 1688 ('914 patent, col. 6, ll. 12-28).

Following a *Markman* proceeding, claims requested by the parties were construed by the court, as follows:

"display system"	"A system comprised of optical filters that can be used in combination with an aid, with light amplifying, passive, and night vision qualities, and a display of colors that includes a source of light perceptible by the night vision aid." *Honeywell II*, 66 Fed. Cl. at 437.
"local color display"	"A device that may be used together or in combination with optical filters and shows or exhibits at least one color perceptible to an observer or observers utilizing a night vision aid." *Honeywell II*, 66 Fed. Cl. at 444.

"local source of light"	"An essential element of the local color display that must be perceptible to an observer or observers with a night vision aid." *Honeywell II*, 66 Fed. Cl. at 447.
"filters light from the local color display"	The starting point for filtering light occurs at the filters. *Honeywell II*, 66 Fed. Cl. at 453.
"notch filter"	An optical filter that has the capacity both to pass and substantially block light and may be a single-notch filter or a multi-notch filter. *Honeywell II*, 66 Fed. Cl. at 459.
"color bands" in claim 2(a)	To include the range of wavelengths, within which the colors blue, red, and green are visible to the human eye. *Honeywell II*, 66 Fed. Cl. at 466.
"red color band"	A range of color from 620 nm to 780 nm. *Honeywell II*, 66 Fed. Cl. at 471.
"substantially blocks"	Claim 2(b): Preventing light from the narrowband of the red color band from entering the night vision aid in an amount that permits the night vision aid to function. *Honeywell III*, 70 Fed. Cl. at 468.
"first," "second," "third," "fourth," and "filter"	Identifies the various members of a group. *Honeywell II*, 66 Fed. Cl. at 482.

"blue color band"	A range of color from 455 nm to 492 nm. *Honeywell II*, 66 Fed. Cl. at 485.
"green color band"	A range of color from 492 nm to 577 nm. *Honeywell II*, 66 Fed. Cl. at 487.

In addition, the construction of the following claims was the subject of a stipulation by the parties:

"optical filter" and "filter"	"[W]hen used as nouns in the claims of the '914 patent, mean 'a device that selectively passes and blocks electromagnetic radiation.' . . . '[F]ilters' (plural), when used as a noun, means two or more filters." *Honeywell II*, 66 Fed. Cl. at 448.
"filter" and "filtering"	"[W]hen used as verbs in the claims of the '914 patent, mean 'selectively to allow (or allowing) light to pass and be blocked.'" *Honeywell II*, 66 Fed. Cl. at 448.
"passes"	"[M]eans 'allows to go through.'" *Honeywell II*, 66 Fed. Cl. at 459.
"predetermined color bands"	"[A]s used in [c]laim 1(a) of the '914 patent, requires no further construction aside from the term 'color band.'" *Honeywell II*, 66 Fed. Cl. at 466.
"predetermined red color band"	"'[A] specific range of wavelengths within the red color band.'" *Honeywell II*, 66 Fed. Cl. at 472.

"narrowband of the red color band"	"[M]eans 'a narrow range of wavelengths within the red color band.'" *Honeywell II*, 66 Fed. Cl. at 487.

b. Comparison Of The Construed Claims Against The Prior Art.

The Government argues that two references anticipate the '914 patent. *See* Gov't PT Def at 51-53 (citing *Pave Low III: Interior Lighting Reconfiguration for Night Lighting and Night Vision Goggle Compatibility*, H.L. Task & L.L. Griffin, Human Engineering Division, Aerospace Medical Research Laboratory, Wright-Patterson, AFB, Ohio at 106-16 ("TASK & GRIFFIN III") (DE 508) and *Shared Aperature Filter Technique for Use with AN/PVS-5A Night Vision Goggles*, F. Reetz III, Masters Thesis, The Pennsylvania State University, The Graduate School, August 1983 ("REETZ THESIS") (DE 301).[18]

i. "A display system"

Dr. Task testified that TASK & GRIFFIN III discloses: a system of optical filters, with a red plastic filter placed over the NVGs; a Micro-Louvre baffle, employed over an incandescent lamp illuminated by a moving map display; and a Glendale Green filter applied to the display. *See* DE 500 187; *see also* DE 508 at DE-1615, DE-1617, DE-1618. The Government contends that the moving

[18] The court has determined that the REETZ THESIS is not prior art.

map display is the "display of colors," discussed in the court's claim construction. *See* DE 500 104 ("Indeed, the moving map display in the Pave Low III was a full color display using straight through optical projection of a 35 mm filmstrip of selected aeronautical charts.").

Honeywell responds that TASK & GRIFFIN III does not disclose a "display system," because it does not feature a "display of colors," as required by the court's claim construction. *See* Pl PT Op Def at 103. Honeywell first contends that the moving map display would be understood by one of ordinary skill in the art, in 1985, to be a projector that could be used with various transparent films containing maps. *Id.* (citing PTX 834 19 (Tannas)); *see also* TR 683 (Task) ("[The moving map display] uses an incandescent light source in the display . . . and then it illuminates or goes right through a slidex or a transparency film, much like a 35 millimeter slide projector."). The film, however, should not be considered part of the display. *See* Pl PT Op Def at 103-04 (citing PTX 834 ¶ 20 (Tannas)); *see also* PTX 833 ¶ 99 (Lawrence) ("[M]oving map displays all required insertion of a film or cartridge that would contain the map or maps used in the display[.]"); TR 704 (Task) (HONEYWELL COUNSEL: "[T]he film isn't part of the device, right? It's no more part of the device than my VHS tape is for my VCR, right?" DR. TASK: "I guess you could consider it that way, although without that critical component, that would just be a yellow light[.]"). In addition, Honeywell argues that the film for the moving map display should not necessarily be construed to be a color film. *See* Pl PT Op Def at 104 (citing PTX 834 ¶¶ 21-26

(Tannas)); *see also* PTX 833 ¶ 99 (Lawrence) ("[M]aps were sometimes in color and sometimes in black and white."); TR 687-88 (Task) (HONEYWELL COUNSEL: "Is there anything in the article itself that anywhere refers to the moving map display as being color?" DR. TASK: "No, I'm relying on one of ordinary skill in the art to know that moving map display would be a film based system, and that for that aircraft would be a color moving map display.").

The court's construction of "a display system" requires a "display of colors." *Honeywell II*, 66 Fed. Cl. at 437. This element would only be present in TASK & GRIFFIN III if the moving map displayed a color map projection. Therefore, the court has determined that the moving map display, described in TASK & GRIFFIN III, does not anticipate the court's construction of "display system" in claim 2 of the '914 patent and this element is not disclosed in the prior art.

The moving map display is mentioned only three times in TASK & GRIFFIN III, in the context of lessening the impact of cockpit incandescent light on the operation of NVGs. *See, e.g.*, DE 508 at DE-1616 ("It is not possible to turn off all incandescent lights in the cockpit since some are required instrument status lights."); *see also* DE-1617 ("T[he] technique of using ML baffles was successfully employed over several indicator lamps and displays including the incandescent lamp illuminated moving map display located in the center console."); DE-1618-19 ("[T]he moving map (navigation) display was marginally acceptable in daytime when sufficient IRBM was applied to block the IR emissions for night use."). In

addition, neither the use of a particular film cartridge nor the effect of the colors from the color map projection is mentioned in TASK & GRIFFIN III. *See* DE 508. Dr. Task also testified that the main problem with making NVGs compatible with cockpit lighting was interference caused by incandescent lights. *See* DE 500 ¶ 36 ("Light from instruments and displays and general cockpit lighting can enter the NVGs thereby interfering with the pilot's view of the outside scene. This interference was caused primarily by the fact that traditional cockpit lighting used incandescent lamps with red filters to light most of the instruments and panels in the cockpit.").

Likewise, Final Report: Pave Low III Prototype Development Test and Evaluation ("PAVE LOW III")[19], describes the moving map display as "consist[ing] of a display unit which houses the 35mm filmstrip cassette, lamp, optics, and controls; a signal data converter; and a step-down transformer." DE 527 at GVT011-4526. Film maps used in this system feature: "35mm color reproductions of selected aeronautical charts[.]" *Id.*; *see also* DE 500 ¶ 104 (Task) ("That the moving map display was known as a 'full color display' is supported by the fact that it was referenced as one in a March 1978 technical report[.]"). Col. Lawrence and Mr. Tannas, however, testified that both black and white and color maps were used in moving map displays. *See* PTX 834 ¶¶ 21-26 (Tannas); PTX 833 ¶ 99

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[19] PAVE LOW III is a technical report on the Pave Low III helicopter prepared by the Defense Technical Information Center.

(Lawrence). Mr. Tannas further testified that PAVE LOW III would not necessarily be available to one of ordinary skill in the art, in 1985, as it was a Government document. *See* PTX 834 ¶ 26. The court has determined that one of ordinary skill in the art, in 1985, however, would be knowledgeable about "night vision compatible aids, compatible instrument and panel lighting, and manufacturing displays for *military* cockpits." *Honeywell II*, 66 Fed. Cl. at 428 (emphasis added). Therefore, it is reasonable to assume such individuals would have had access to a specification like PAVE LOW III.

To anticipate inherency, the reference must necessarily disclose the unstated function of the element. *See Atofina* v. *Great Lakes Chem. Corp.*, 441 F.3d 991, 1000 (Fed. Cir. 2006); *see also In re Oelrich*, 666 F.2d at 581 ("If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in *the performance of the questioned function*, it seems to be well settled that the disclosure should be regarded as sufficient.") (emphasis added); *Parker* v. *Ballantine*, 26 C.C.P.A. 799, 803 (1939) ("Possibly in the operation of the Parker device, at some point on the more nearly linear portion of the characteristic curve of the tube, it might actually happen that there would be slight reduction of amplification, but it is apparent that this would not necessarily be the result."). Although the PAVE LOW III describes using color film in the moving map display, other testimony in the record indicates that black and white film might also have been used. *See* PTX 834 ¶¶ 21-27 (Tannas); PTX 833 ¶ 99 (Lawrence). The fact that the filter system described in TASK &

GRIFFIN III would function the same, regardless of whether color or black and white film was used or if no film was inserted into the moving map display, implies that the film was not *necessarily* present. Because "inherency. . . may not be established by probabilities or possibilities," the court has determined that the Government has failed to prove by clear and convincing evidence that color film necessarily was disclosed, nor that any "display of colors" was disclosed by TASK & GRIFFIN III. *See MEHL/Biophile Int'l Corp.* v. *Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999) ("Inherency, however, may not be established by probabilities or possibilities.").

ii. "for use in association with a light amplifying passive night vision aid"

The Government argues that TASK & GRIFFIN III, "Pave Low III Interior Lighting Reconfiguration for Night Lighting and Night Vision Goggle Compatibility," and several explicit references pertaining to the use of NVGs, together disclose the use of night vision goggles. *See* DE 508 at DE-1610-12; Gov't PT Def at 51-52. Honeywell does not dispute that TASK & GRIFFIN III discloses this element, but challenges the Government's satisfaction of the burden of proof. *See* Pl Op Def at 108-09. The court, however, has determined that the Government and Defendant-Intervenors established that the prior art discloses "for use in association with a light amplifying passive night vision aid" by clear and convincing evidence.

iii. "and a local color display"

The Government argues that the moving map display in TASK & GRIFFIN III is a local color display, as construed by the court. *See* Gov't PT Def at 51-52 (citing DE 500 ¶ 187 (Task) ("A local color display capable of producing at least one perceptible color was disclosed: '. . . successfully employed over . . . displays including the incandescent lamp illuminated moving map display[.]' (D000580, lines 9-11). One of ordinary skill in the art, being knowledgeable in the manufacturing of displays for military aircraft, would . . . know that the moving map display in this aircraft was a full color display.")). In addition, the Government contends that the type of goggles disclosed by the reference is inconsequential to whether an observer utilizing a night vision aid can perceive at least one color from the display. *See* Gov't Def Reply at 27 ("[I]t is unclear why Honeywell believes that the display itself changes depending on the goggle set used with it. A display that 'shows or exhibits at least one color perceptible to an observer or observers utilizing a night vision aid' would 'show or exhibit' the same colors no matter what goggles are being worn by the pilot.").

Honeywell responds that TASK & GRIFFIN III does not disclose "a local color display," because the reference discloses AN/PVS-5 NVGs that do not allow the wearer to see the colors of the display. *See* Pl PT Op Def at 105 (citing PTX 834 ¶¶ 30-42 (Tannas)); *see also* TR 699-700 (Task).

The court has determined that the moving map display described in TASK & GRIFFIN III does not satisfy the court's construction of a "local color display" and therefore this claim element is not disclosed by this prior art. The court's claim construction requires that a "local color display" be "[a] device that may be used together or in combination with optical filters and shows or exhibits at least one color perceptible to an observer[.]" *Honeywell II*, 66 Fed. Cl. at 444. The court did not require that display to be "a full color display that is NVG compatible," contrary to Honeywell's contention. *See* Pl PT Op Def at 18-19 ("[T]he problem addressed by the invention was 'placing a full color display in a cockpit.'"). Dr. Tannas testified that a user of the goggles described in TASK & GRIFFIN III would not be able to see the colors that could be seen by looking directly at the moving map display. *See* PTX 834 ¶ 36 (Tannas) ("[I]f the user of the AN/PVS-5 night vision goggles described in [TASK & GRIFFIN] were to look at the instrument panel through the goggles, he would not see any colors that could be seen by looking directly at the instruments, but would instead see a monochrome green image of the instrument panel on a phosphor screen that is part of the NVGs."); *see also* TR 1431-32 (Tannas) (HONEYWELL COUNSEL: "So if the display is a full color display with red, green, and blue primaries, but it is being used with PVS-5 night-vision goggles, is that a local color display that satisfies the Court's claim construction?" MR TANNAS: "No. You would not be able to see no matter how you configured it . . . [y]ou could not see color, period. . . it says a local color display is supposed to see at least one perceptible

color. Well, presumably it is a color that the display . . . has, not green in the goggle, even one color. It doesn't even pass the test of one color."). Therefore, whether a 'local color display' is disclosed by TASK & GRIFFIN III depends on what kind of goggles are disclosed.

TASK & GRIFFIN III discloses AN/PVS-5 night vision goggles. *See* DE 508 at D000574 ("Figure 3 shows a pair of the AN/PVS-5 night vision goggles."). Therefore, as Dr. Task testified:

HONEYWELL COUNSEL: Now, once again, this article deals with the old-style goggles that you cannot look underneath, isn't that right?
DR. TASK: It's the old-style goggles which makes it difficult for you to look underneath.
HONEYWELL COUNSEL: And they're not intended to look underneath?
DR. TASK: They're not designed for that, that's correct.
HONEYWELL COUNSEL: And that's what's disclosed in the article . . . for its purposes and its analyses, right?
DR. TASK: That is correct.

TR 699-700.

Dr. Task and Col. Lawrence testified, however, that the AN/PVS-5 goggles could be modified by cutting away the full face mask. *See* TR 1590-91 (Task) ("In 1985 it was well known that you could do cut-aways on PVS-5 night-vision goggles or look under for night-vision goggles."); *see also* TR 996-98 (Lawrence) (same). TASK & GRIFFIN III does not

explicitly disclose using cut-away PVS-5 goggles, so that the pilot wearing the NVGs can see the display; instead, that decision is left to the co-pilot. *See* DE 508 at D000757 ("The desired operating condition was for the pilot to wear the NVGs to fly the helicopter while observing the outside world, and for the copilot to monitor the FLIR video display and the aircraft instruments. Thus the fundamental problem was to design a means of lighting such that the copilot had sufficient light to monitor the cockpit instruments but insure that the lighting did not interfere with the pilot's NVGs."). To anticipate inherently, TASK & GRIFFIN III "must necessarily include the unstated limitation." *Atofina*, 441 F.3d at 1000. The assumption that the co-pilot does not have NVGs to read the displays evidences that cut-away PVS-5 goggles are not necessarily included, because TASK & GRIFFIN III does not contemplate having a NVG-wearing pilot read the displays while flying the helicopter. *See* TR 1590-91 (Task) ("[T]here is no question, both [TASK & GRIFFIN III and REETZ THESIS] used a full face mask PVS-5 goggle, but in both cases there had been sufficient light so that one not wearing the night-vision goggles would see [the displays]."). Because inherency may not be established by "probabilities or possibilities," the court has determined that cut-away PVS-5 goggles are not necessarily disclosed. Therefore, the court has determined that the Government has failed to establish by clear and convincing evidence that a "local color display" was disclosed by TASK & GRIFFIN III. *See MEHL/Biophile Int'l Corp*, 192 F.3d at 1365 (*quoting In re Oelrich*, 666 F.2d at 581) (internal quotations omitted).

iv. "including a local source of light having blue, red, and green color bands"

The moving map display in TASK & GRIFFIN III is illuminated by an incandescent lamp. *See* DE 508 at D000580 ("This technique of using [Micro-Louver] baffles was successfully employed over several indicator lamps and displays including the incandescent lamp illuminated moving map display located in the center console."). Therefore, the Government argues that "[o]ne skilled in the art would understand that an incandescent lamp emits light across the entire visible spectrum, including light in the wavelengths construed by the [c]ourt to be within the blue, red and green color bands." *See* Gov't PT Def at 51-52 (citing DE 500 ¶ 103 (Task)). Honeywell does not dispute that TASK & GRIFFIN III discloses this element. *See* Pl PT Op Def at 103-08. Therefore, the court has determined that the Government and Defendant-Intervenors established by clear and convincing evidence that TASK & GRIFFIN III discloses a "local source of light."

v. "a first filter for filtering the blue color band of the local source of light"

Dr. Task testified that "the film could be considered the first filter for filtering the blue color band since at least some blue wavelengths reach this filter." DE 500 ¶ 106. He further testified that "[a]lternatively, the portions of the film used to produce the moving map display that are blue in color could be considered to be the first filter for

filtering the blue color band[.]" *Id.* at ¶ 108. Therefore, the Government argues that either the entire film within the moving map display or the portions of the film that are blue in color could be considered the first filter under the court's claim construction. *See* Gov't PT Def at 51 (citing DE 500 ¶¶ 100-23). In addition, the Government argues that the court's claim construction does not require the filters to be "wavelength selective filters." *See* Gov't Def Reply at 27-28.

Honeywell responded that Dr. Task's testimony is based on the mistaken assumption that the court's claim construction does not require wavelength selective filters. *See* Pl PT Op Def at 105-06. The film used in the moving map display cannot be considered the first filter, because the film is not part of the display and is not necessarily color film. *Id.* at 106 (citing PTX 834 ¶¶ 51-54, 58 (Tannas)).

The court has determined that the film in the moving map display is not disclosed by TASK & GRIFFIN III. Because the film is not disclosed, *ipso facto* it cannot serve as the first filter for filtering the blue color band of the local source of light. Assuming, *arguendo*, that the color film is disclosed by TASK & GRIFFIN III, nevertheless, the Government has failed to establish by clear and convincing evidence that either the whole film or the blue portions of the film constitute the "first filter." In addition, since the court has determined in the following section of this Memorandum Opinion that the Micro-Louver filter does not meet the court's construction for a second filter in claim 2(a)(2), the only remaining possible filter is the green portion of the film. This would

make the color film both the first and second filters; however, this film is only one device and cannot also serve as two filters. *See* PTX 834 ¶¶ 76 - 77 ("The [c]ourt has defined 'filter' as a 'device,' and any color film that would be used in the moving map display described in [TASK & GRIFFIN III] must be considered a single device, not two separate filters or devices. . . . Even if a single frame of color film happens to contain red features, blue features, and green features[,] these features are not separate and distinct filters like the red, green and blue pixel filters of an LCD display."). For this additional reason, the court has determined that the Government has failed to establish by clear and convincing evidence that "a first filter" is disclosed by TASK & GRIFFIN III.

vi. "a second filter for filtering the green color band of the local source of light"

Next, the Government argues that either the Micro-Louver filter or the green portions of the film in the moving map display could be considered the second filter under the court's claim construction. *See* Gov't PT Def at 51 (citing DE 500 ¶¶ 100-23). Dr. Task explained that a Micro Louver filter "acts like 'Venetian blinds,' [and] selectively passes and blocks light depending on its direction of emission from the display and is a filter." DE 500 ¶ 107. In the alternative, "the portions of the film that are green in color could be considered the second filter for filtering the green color band." *Id.* ¶ 108. The Government also argues that the court's claim construction does not require wavelength selective

filters and that the filters may use another criterion for passing or blocking light. *See* Gov't Def Reply at 27-28.

Honeywell responds that the Micro-Louver filter cannot be considered the second filter, because it is not wavelength selective. *See* Pl PT Op Def at 106 (citing PTX 834 ¶¶ 62-73; TR 726 (Task) ("A micro-louvre is like a miniature venetian blind, . . . what it does is it allows light that is emitted in certain directions to be passed, mostly, and a light that goes in other directions are not passed[.]")). The film used in the moving map display cannot alternatively be considered the second filter, because the film is not part of the display and is not necessarily color. *See* Pl PT Op Def at 106 (citing PTX 834 ¶¶ 51-54, 58 (Tannas)).

TASK & GRIFFIN III describes the Micro-Louver as a material that comes in various fan widths and tilt angles and can be used to direct light away from the windscreen to control reflection. *See* DE 508 at D000579. The criteria for the Micro-Louver's filtering of light is therefore based on direction, not wavelength. The court construed the words "filter"or "filtering" when used as verbs to mean "'selectively to allow (or allowing) light to pass and be blocked.'" *Honeywell II*, 66 Fed. Cl. at 448. Reading the "filtering" and "green color band" definitions into the claim language yields "a second filter for selectively allowing a range of color from 492 nm to 577 nm of the local source of light to be passed and be blocked." Accordingly, the second filter is wavelength selective.

The Micro-Louver filter, however, is not wavelength selective. Therefore, any light that reaches it will be filtered directionally depending on the fan width and the tilt angle. *See* DE 508 at D000579 ("Thus a 48° fan at 0° tilt results in a light distribution that is emitted vertically (with respect to surface of material) with a 48° spread."). The court has discussed the reasons why the film of the moving map display is not disclosed as a filter. Therefore, the court has determined that the Government and Defendant-Intervenors failed to establish by clear and convincing evidence that a second filter for filtering the green color of the local source of light is disclosed by TASK & GRIFFIN III.

vii. "a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band"

The Government also asserts that the Glendale Green filter that was placed over the moving map display is the third filter for filtering the red color band that passes a narrowband of the red color band. *See* Gov't PT Def at 51-52 (citing DE 500 ¶¶ 109-110, 187). Dr. Task presented two figures in his written direct testimony to show that the Glendale Green filter passes a narrowband of the red color band. *See* DE 500 ¶ 110. The Government also relies on a transmission curve for the Glendale Green filter from an article titled "Infrared Filter Materials" to show that the filter filters the red color band and passes a narrowband of the red color band. *See* DE 516 at LHM 000466.

Honeywell responds that there is no evidence that the Glendale Green filter passes perceptible red light from the red color band when placed over the moving map display in TASK & GRIFFIN III. *See* Pl PT Op Def at 106. TASK & GRIFFIN III only cites a lack of transmission spectrum for the Glendale Green filter. *Id.* Moreover, Dr. Task's calculations failed to account for the emission spectrum of the incandescent lamp, the transmission characteristics of the transparency film, and other components of the moving map display. *Id.* at 107 (citing PTX 834 ¶¶ 97-109).

The court has determined that TASK & GRIFFIN III does not disclose a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band. TASK & GRIFFIN III discloses using a Glendale Green filter in conjunction with a Micro-Louver filter to "provide fairly effective control of both visible and IR radiation" and describes that filter as having "a definite green tint and affect[ing] the red end of the visible [spectrum] much more severely than the green." DE 508 at D000580. TASK & GRIFFIN III does not disclose the transmission spectrum for the filter, nor the emission spectrum of the incandescent lamp in the moving map display. *See* TR 698 (Task) (HONEYWELL COUNSEL: "Now, the Glendale [G]reen, the article itself does not provide the transmission spectrum for that, does it?" DR. TASK. "That's correct. It does not have that perspective . . . " HONEYWELL COUNSEL: "Now, the article itself does not tell you what's coming out of the display in terms of the emission spectrum, is that right?" DR TASK: "That is correct."). The emission spectrum of

the lamp is necessary to determine the amount of light emitted at a particular wavelength. *See* PTX 834 ¶ 103 ("The amount of light emitted by an incandescent light as a function of wavelength depends upon many different factors, including the color temperature of the lamp and the brightness setting of the moving map display[.]").

Moreover, the Glendale Green transmission spectrum described by Dr. Task relies on data from Figure 1 of DE 516. *Id.* ¶ 130 ("Task's spreadsheet identifies the source of the spectral data for the Glendale Green filter as 'Fig. 1 of Bartleson,' *i.e.*, Bertelson, DE-516."); *see also* PTX 827; DE 516 at LHM 000466. In contrast, the spectrum from DE 516 relied upon by Dr. Task has handwritten wavelength values and irregularly-spaced intervals on the x-axis. *See* DE 516 at LHM 000;4 66 *see also* PTX 834 ¶ 135 ("The wavelength values (in nanometers) are handwritten and irregularly spaced, and it is unclear how they came to appear on the graph. To me, Figure 1 appears to be a laboratory scan generated to show the performance of the filter sample in a qualitative sense, not for the purpose of showing its spectral characteristics in any precise way."). It is unclear whether the transmission spectrum for the Glendale Green filter in DE 516 necessarily describes the Glendale Green filter disclosed in TASK & GRIFFIN III. The "Infrared Filter Materials" article states that "[t]he moving map (navigation) display was marginally acceptable in daytime when sufficient IRBM was applied to block the IR emissions for night use." DE 508 at D000581-82. The use of the phrase "sufficient IRBM," however, implies that there may have been more than one Glendale Green filter

applied to the moving map display. *See* PTX 834 ¶ 132 ("The phrase 'sufficient IRBM' implies that more than one layer of Glendale Green filter material was placed over the moving map display."). The presence of more than one layer of Glendale Green filters would change the transmission of the filter. *Id.* ¶¶ 132-33 ("[T]he greater the thickness of an absorbing filter, the less its transmission. . . . [T]he transmission of the Glendale Green filter material would be substantially less, if multiple layers were used, as is implied by the phrase 'sufficient IRBM' in DE-508.").

Because it is not clear whether the transmission spectrum in DE 516 describes the Glendale Green filter used in DE 508, and because the "Infrared Filter Materials" article fails to disclose an emission spectrum for the incandescent lamp used in the moving map display, the court has determined that the Government and Defendant-Intervenors have not established by clear and convincing evidence that a third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band is disclosed by TASK & GRIFFIN III.

viii. "a fourth filter which filters light at the night vision aid, said fourth filter cooperating with said plurality of filters to substantially block at least said narrowband of the red color band from being admitted to the night vision aid"

The Government argues that a red plastic filter placed over the NVGs in TASK & GRIFFIN III is the fourth filter which filters light at the night vision aid. *See* Gov't PT Def at 51-52 (citing DE 500 ¶¶ 111, 187). Dr. Task testified that this filter "blocked the offending light sufficiently to permit the NVGs to function as intended[.]" DE 500 ¶ 111. Because the NVGs functioned as intended, a fourth filter was disclosed. *See* Gov't Def Reply at 28 (citing the reasoning in the REETZ THESIS, as applicable to TASK & GRIFFIN III).

Honeywell responds that the transmission spectrum for the red filter shows that it did not substantially block light in the range of 620 nm to 780 nm. *See* Pl PT Op Def at 107 (citing PTX 834 ¶¶ 142, 147; DE 508 at D000578). Just because the NVGs functioned as normal does not mean that the red plastic filter substantially blocked the narrowband of red color from being admitted to the night vision aid. *Id.* (citing PTX 834 ¶ 148).

TASK & GRIFFIN III only discloses "a red plastic filter . . . placed over the NVGs that was also high transmissive in the near infra-red." DE 508 at D000578. Figure 8 of TASK & GRIFFIN III shows a comparison of NVG sensitivity with and without this red filter. *Id.* The court's claim construction of "substantially blocks," however, requires the filter to prevent "light from the narrowband of the red color band from entering the night vision aid in an amount that permits the night vision aid to function." *Honeywell III*, 70 Fed. Cl. at 468. Therefore, the fourth filter must prevent some light from the narrowband of the red color band from entering the

night vision aid, to allow the night vision aid to function. The fact that night vision aid was "functional" does not necessarily mean that the filter prevented any light from the narrowband of the red color band from entering the night vision aid. Although Figure 8 in TASK & GRIFFIN III shows that some light from the red color band is filtered by the red plastic filter, claim 2 requires that the light filtered be from the narrowband of the red color band passed by the third filter. Because TASK & GRIFFIN III does not disclose a third filter that passes a narrowband of the red color band, it also cannot disclose a fourth filter that substantially blocks the same narrowband of the red color band to allow the night vision aid to function. Therefore, the court has determined that the Government and Defendant-Intervenors have not established by clear and convincing evidence that "a fourth filter which filters light at the night vision aid, said fourth filter cooperating with said plurality of filters to substantially block at least said narrowband of the red color band from being admitted to the night vision aid" is disclosed by TASK & GRIFFIN III.

3. Obviousness.

a. Governing Precedent.

Section 103 of the Patent Act provides that prior art invalidates a patent for obviousness, when the:

> differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole

> would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

35 U.S.C. § 103(a).

In *Graham* v. *John Deere Co.*, 383 U.S. 1, 17 (1966), the United States Supreme Court "set out a framework for applying the statutory language of [Section] 103 . . . [that] is objective:"

> Under § 103, the *scope and content* of the *prior art are* to be determined; *differences between the prior art and the claims at issue are to be ascertained*; and the level of ordinary skill in the pertinent art resolved. . . . Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

KSR, 127 S. Ct. at 1734 (quoting *Graham*, 383 U.S. at 17-18); *see also id.* (reaffirming that these "factors continue to define the [obviousness] inquiry").

b. The Scope And Content Of The Prior Art.

The first step in the *Graham* analysis requires the court to determine the scope and content of the prior art. *See Graham*, 383 U.S. at 17-18. The court

has made that determination. *See* Section II. B., *supra*.

c. The Level Of Ordinary Skill In The Art.

The second step in the *Graham* analysis requires the court to determine the level of skill of "one of ordinary skill in the art." *See Graham*, 383 U.S. at 17-18; *see also Ruiz* v. *A.B. Chance Co.*, 234 F.3d 654, 666 (Fed. Cir. 2000) ("The determination of the level of ordinary skill in the art is an integral part of the *Graham* analysis.") (citation omitted).

The parties agree that the court's *Markman* ruling regarding a person of ordinary skill in the art, in 1985, also should be used in the validity determination. *See* TR 1156 (GOVERNMENT COUNSEL: "This is something that's been decided. One of ordinary skill in the art in 1985 is the same, and it has to be the same in the *Markman* proceeding in the infringement stage and then in the validity stage. You have to have the same person. So the Court has decided who the person of ordinary skill in the art is, and we can't change horses midstream here."); *see also* Pl PT Op Def at 23 ("The Court has already determined the level of ordinary skill in the art in its claim construction decision[.]"); *see also* PTX 834 ¶¶ 248-49 (Tannas Direct) ("I understand that the Court has already determined the level of ordinary skill in the art . . . I cannot disagree with the Court's ruling[.]").

Nevertheless, the Government argues that the court's determination of ordinary skill in the art

should be interpreted *more specifically*. *See* Gov't PT Def at 19. As Dr. Task testified:

> Specifically, the skilled artisan would have been well versed in or be able to easily understand optical filter techniques, optical filter types (band pass, low pass, high pass, etc.), color display emission spectra, full color display types (superposition of color images vs. spatial integration, for example), monochromatic display transducers, the relationship between wavelengths and color, radiometry, photometry, the wavelengths of the visible spectrum, and the spectral sensitivity of the specific night vision goggles (light amplifying devices) to be used. Knowledge of cockpit geometry might also be necessary to determine the level of blocking required of the filters such that the NVGs are not "overwhelmed." One of ordinary skill in the art would possess at least a B.S. in electrical or optical engineering or physics. Two to four years of experience in the areas identified above could also substitute for formal education.

Gov't PT Def at 19 (citing DE 500 ¶ 44 (Task Direct)). Based on this interpretation, the Government contends "that numerous individuals possessed this level of skill in 1985, including [Dr. Task], Ferdinand Reetz, and James Byrd." *Id.*

Honeywell responds that the Government's interpretation "turn[s] one of ordinary skill in the art into one of extraordinary/inventive skill." Pl PT Op

Def at 23. Therefore, all of Dr. Task's obviousness testimony is flawed, as it is based on his definition of one of ordinary skill in the art instead of the court's *Markman* definition. *Id.* ("Dr. Task offered no obviousness testimony whatsoever applying the Court's finding of one of ordinary skill in the art[.]"). Honeywell states, however, that at the time of the invention, "there was no one field of engineering that encompassed all skills necessary" and "[n]o one person had in-depth knowledge of all the relevant fields[.]"). PTX 834 ¶ 250 (Tannas Direct).

The court has determined that "one of ordinary skill in the art, in 1985, would be knowledgeable about night vision compatible aids, compatible instrument and panel lighting, and manufacturing displays for military cockpits." *Honeywell II*, 66 Fed. Cl. at 428. In conducting the obviousness inquiry, the court will continue to rely on this definition. *Id.* Therefore, the court has considered whether the '914 patent would be obvious to this hypothetical individual, not to the actual inventor or "to the judge, or to a layman, or to those skilled in remote arts, or to geniuses in the art." *Custom Accessories, Inc.* v. *Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986) (internal quotation and citation omitted); *see also KSR*, 127 S. Ct. at 1742 ("The question is not whether the combination was obvious to the patentee[,] but whether the combination was obvious to a person with ordinary skill in the art."); *Envtl. Designs, Ltd.* v. *Union Oil Co.*, 713 F.2d 693, 697 (Fed. Cir. 1983) ("The important consideration lies in the need to adhere to the statute, *i.e.*, to hold that an invention would or would not have been obvious, as a whole,

when it was made, to a person of 'ordinary skill in the art' -- not to the judge, or to a layman, or to those skilled in remote arts, or to geniuses in the art at hand.").

The United States Court of Appeals for the Federal Circuit has observed that in considering obviousness, "an expert's testimony is most helpful . . . to explain the technology, the scope and content of the prior art, the differences between the prior art and the invention, and the level of skill in the art." *Petersen Mfg. Co., Inc.* v. *Central Purchasing, Inc.*, 740 F.2d 1541, 1547 (Fed. Cir. 1984). The court, however, may conduct the obviousness inquiry without the aid of expert testimony, since obviousness is an issue of law. *See Petersen Mfg.*, 740 F.2d at 1547-48 . In this case, the court has carefully considered and learned a great deal from the expert testimony.

d. The Differences Between The Prior Art And Claims At Issue.

The third step in the *Graham* analysis requires the court to determine any differences between the prior art and the claims at issue. *See Graham*, 383 U.S. at 17-18. This inquiry entails two additional levels of analysis. First, the court must determine whether each of the elements of claim 2 of the '914 patent was disclosed in the prior art. The fact that each element may be found "somewhere in the prior art" is only an indicia of obviousness, and is not determinative. *See In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000); *see also Stratoflex, Inc.* v. *Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983)

("Though findings on the 'differences' from the prior art are suggested by *Graham* v. *John Deere* . . . the question under 35 USC § 103 is not whether the differences themselves would have been obvious. Consideration of differences, like each of the findings set forth in *Graham*, is but an aid in reaching the ultimate determination of whether the claimed invention as a whole would have been obvious."). Second, the court must compare the invention as a whole to the prior art. *See* 35 U.S.C. § 103; *see also Medtronic, Inc.* v. *Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1567 (Fed. Cir. 1983) ("In determining obviousness/ nonobviousness, an invention must be considered 'as a whole', 35 U.S.C. § 103, and claims must be considered in their entirety.") (citation omitted); *W.L. Gore & Assoc., Inc.* v. *Garlock, Inc.*, 721 F.2d 1540, 1548 (Fed. Cir. 1983). In conducting each part of this additional analysis, the court must render a decision from the vantage point of the person with ordinary skill in the art, in 1985. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1258 (Fed. Cir. 2007) ("An invention is unpatentable as obvious if the differences between the patented subject matter and the prior art would have been obvious at the time of invention to a person of ordinary skill in the art."); *see also Orthopedic Equip. Co.* v. *United States*, 702 F.2d 1005, 1012 (Fed. Cir. 1983) ("The person of ordinary skill in the art at the time of the patentee's invention . . . is presumed to have before him all of the relevant prior art.").

i. Comparison Of The Elements Of Claim 2 Of The '914 Patent With Prior Art.

(a) Claim 2 Preamble: "A Display System For Use In Association With A Light Amplifying Passive Night Vision Aid And A Local Color Display Including A Local Source Of Light Having Blue, Red, And Green Color Bands."

L-3 argues that nine prior art references disclose the Preamble to claim 2, disclosing: "a display system for use in association with a light amplifying passive night vision aid and a local color display including a local source of light having blue, red, and green color bands." *See* L-3 PT Def at 13-14 (chart referencing VERNEY (DE 511;DE 500 ¶ 129); TRIMMIER (DE 514; DE 500 ¶ 126); LLOYD (DE 521 at GVT008-1980; DE 500 ¶ 166); KNIGHT & RITTER (DE 513 at GVT008-1998); SCOUGHTON (DE 522); DE 500 ¶ 167; TASK (DE 506-510 at GVT075-0046); DE 500 ¶ 104; TR 1067, 1072 (Tannas); REETZ[20] (DE 301 at GVT018-1026)); DE 500 ¶ 116; *see also* TR 1063, 1078 (Tannas); BOEHM (DMX 4); DE 500 ¶ 131; TR 1295-96 (Tannas); GERMAN PATENT (DE 505 at GVT007-926); DE 500 ¶ 135. The Government also contends that VERNEY discloses the Preamble of claim 2. *See* Gov't PT Def at 33 (chart referencing VERNEY (DE 511 at GVT009-0780)); *see also* TR 1096, 1347 (Tannas).

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[20] The court has determined that the REETZ THESIS was not prior art.

(1) Uncontested Prior Art.

Honeywell does not contest the Government and Defendant-Intervenors' assertion regarding VERNEY,[21] TRIMMIER,[22] LLOYD,[23] SCOUGHTON,[24] and BOEHM,[25] and the court has determined that these references disclose the elements of the claim 2 Preamble. *See* Pl PT Op Def at 18-74; *see also* PTX 834 at 108-17, (discussing LLOYD), 127-28 (discussing BOEHM), 141-43 (discussing VERNEY), 143-44

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[21] VERNEY discloses a filter to be used with the "master caution, fire warnings and the vertical instrument display system" so they do not adversely affect NVG performance. *See* DE 511 at GVT009-0780.

[22] TRIMMIER is an article that provides an overview for advanced color display technologies in the cockpit including "multifunction displays" that are "[NVG] compatible." *See* DE 514 at GVT018-1662-63.

[23] LLOYD, "Helicopter Cockpit Design for Night Goggle Compatibility," discusses cathode ray tube compatibility with NVGs. *See* DE 521 at GVT008-1980 ("Cathode ray tubes and other phosphor displays emit little or no near infra-red energy and therefore are either immediately compatible with night goggles or require modest filtering or dimming.").

[24] SCOUGHTON discloses a color multifunction display and a filter that allows a pilot to see yellow, blue, and green while using NVGs. *See* DE 522 at GVT009-0394-95 ("With the appropriate pull-down filter, this unit is also NVG compatible[.]").

[25] BOEHM discusses several methods for making helicopter lighting and displays compatible with NVGs. *See* DMX 4 at D000586. The article specifically states that NVGs were "successfully tested with a colour [multifunction display] and a CGI simulator." DMX 4 at D000607.

(discussing TRIMMIER), 147-49 (discussing SCOUGHTON).

(2) TASK & GRIFFIN III And & RITTER.

Honeywell argues that TASK & GRIFFIN III, the REETZ THESIS,[26] KNIGHT & RITTER, and the GERMAN PATENT do not disclose the Preamble of claim 2. *See* Pl PT Op Def at 18-19 (stating that TASK & GRIFFIN III (DE 508) does not "deal[] with a full color display"); *see also* PTX 834 at 7-16, 47 (Tannas). Instead, Honeywell contends that TASK & GRIFFIN III and KNIGHT & RITTER[27] do not "disclose a 'display system,'" because neither discloses a "display of colors." *Id.* Mr. Tannas explained that a display of colors is not disclosed, because "the film used in the moving map display would not necessarily be a color film. Non-color films were known to be used in moving map displays . . . and nothing in [TASK & GRIFFIN III] indicates that the map had to be used with a color film." PTX 834 ¶ 13 (Tannas). Mr. Tannas also asserts that TASK & GRIFFIN III does not disclose a "local color display . . . because the

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[26] The court has determined that the REETZ THESIS is not prior art.

[27] Honeywell states that KNIGHT & RITTER "describes the same . . . study that is discussed in TASK & GRIFFIN I-III . . . and lists the techniques that were used to improve NVG compatibility in that study. . . . [KNIGHT & RITTER] does not disclose or suggest the invention of claim 2 for at least the same reasons I stated above with respect to DE-508 to DE-510." PTX 834 ¶ 449 (Tannas). Therefore, KNIGHT & RITTER must be analyzed together with the TASK ARTICLES.

AN/PVS-5 [NVGs] described . . . were designed so that the user could not look under or around the goggles to see the cockpit instruments and displays." *Id.* Therefore, Mr. Tannas states the display would not be "perceptible to an observer" utilizing a night vision aid. *Id.*

The court has determined that the Preamble of claim 2 was disclosed by the TASK ARTICLES and KNIGHT & RITTER. The TASK ARTICLES address the need to achieve compatibility between cockpit lighting, displays, and NVGs. *See* DE 500 ¶ 100 (Task Direct). The court recognizes that Mr. Tannas testified that the map in the display would "not *necessarily* be a color film" and "nothing in [the TASK ARTICLES] indicate that the map *had* to be used with a color film." *See* PTX 834 ¶ 13 (Tannas) (emphasis added). Nevertheless, Mr. Tannas concedes that the map display could be a color film. *Id.* In addition, the map display was described as "a full color projection of standard aeronautical charts" in a Department of Defense document. *See* DE 527 at GVT011-4526 ("The system consists of a display unit which houses the 35mm filmstrip cassette, lamp, optics, and controls . . . . Filmstrips are 35mm *color* reproductions of selected aeronautical charts[.]") (emphasis added); *see also* DE 500 ¶ 104 (Task) ("[T]he moving map display was known as a 'full color display,'" as "referenced in a March 1978 technical report[.]"). Therefore, the prior art discloses a display system based on the court's construction that the prior art disclosed a "display of colors." *See Honeywell II*, 66 Fed. Cl. at 437.

The TASK ARTICLES discuss compatibility with AN/PVS-5 NVGs that had a face mask preventing an operator from looking under or around the goggles. *See* PTX 834 ¶ 13 (Tannas); *see also* DE 506 at GVT009-0472. That does not mean, however, that the TASK ARTICLES did not disclose "[a] device that may be used together on in combination with optical filters and shows or exhibits at least one color perceptible to *an* observer or observers utilizing *a* night vision aid." *Honeywell II*, 66 Fed. Cl. at 444 (emphasis added); *see also In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986) ("[P]rior art as a whole must be considered."). Therefore, although the TASK ARTICLES do not disclose a device perceptible to an observer using standard configuration AN/PVS-5 NVGs, but instead disclose a device perceptible to an observer using *a* night vision aid. For this reason, Col. Lawrence testified that the AN/PVS-5's face mask could be cut away allowing a pilot to see the controls. *See* TR 996-98 (Lawrence). Even if the NVGs would make operating a helicopter more difficult, the cut-away NVGs demonstrate that the map would be perceptible to an observer using *a* night vision aid. *See* TR 998 (Lawrence) ("So in order to look at the instrumentation -- I had a choice of either looking through the goggles and seeing what I wanted to see outside, or raising my head up so I could see the instrumentation."). Significantly, AVNIS-6 NVGs, that allowed the pilot to look under the goggle at a display, were available in 1985. *See* TR 1074-75 (Tannas). The ANVIS-6 goggles also could be a night vision aid, used in conjunction with the display described in the TASK ARTICLES. Moreover, the TASK ARTICLES discuss the Army's interest in developing cockpit lighting in a

configuration where: "the pilot [would] wear [NVGs] for piloting the aircraft while the copilot did not wear goggles so that he could monitor the aircraft instruments[.]" DE 506 at GVT009-0472.

(3) GERMAN PATENT.

Honeywell also argues that the GERMAN PATENT is not "perceptible to an observer . . . using a night vision aid," because it does "not disclose or suggest a person utilizing a night vision device could look under or around the device to see any colors displayed on the instrument panel." PTX 834 ¶ 374 (Tannas). The GERMAN PATENT discloses a "[d]evice for observing a luminous indicating instrument in such a way that in darkness it is observable both with the naked eye or with the aid of a night-vision device[.]" DE 505 at 2 ¶ 1. Contrary to Honeywell's arguments, the court's claim construction does not require that the GERMAN PATENT disclose how to "look under or around the [NVGs]." *Compare Honeywell II*, 66 Fed. Cl. at 444 *with* PTX 834 ¶ 374 (Tannas). Therefore, the GERMAN PATENT discloses the Preamble of claim 2.

* * *

For these reasons, the court has determined that the following prior art discloses "a display system for use in association with a light amplifying passive night vision aid and a local color display including a local source of light having blue, red, and green color band:" VERNEY; TRIMMIER; LLOYD; KNIGHT & RITTER; SCOUGHTON; BOEHM; the TASK ARTICLES; and the GERMAN PATENT.

(b) Claims 2(a), 2(a)(1), 2(a)(2): "A Plurality Of Filters At The Local Color Display including (1) A First Filter For Filtering The Blue Color Band Of The Local Source Of Light; (2) A Second Filter For Filtering The Green Color Band Of The Local Source Of Light"

The Government and Defendant-Intervenors argue that five prior art references disclose claims 2(a), 2(a)(1), and 2(a)(2), *i.e.*, a "plurality of filters at the local color display including (1) a first filter for filtering the blue color band of the local source of light; (2) a second filter for filtering the green color band of the local source of light."[28] *See* L-3 PT Def at 13-14 (chart referencing the TASK ARTICLES (DE 510 at GVT075-0046; DE 500 ¶ 106); REETZ THESIS (DE 301 at GVT018-21;[29] DE 500 ¶ 119); UCHIDA (DE 515 at GVT009-0486; DE 500 ¶ 174); STOLOV (DE 519 at 1; DE 500 ¶ 178; TR 1059 (Tannas)); *see also* Gov't PT Def at 33 (chart referencing VERNEY (DE 511 at GVT009-0780)).

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[28] L-3 cites VERNEY, TRIMMIER, and BOEHM as suggesting 28 a full color display in an aircraft. *See* L-3 PT Def at 13-14 (chart).

[29] The court has determined that the REETZ THESIS was not prior art.

(1) UCHIDA, STOLOV, And VERNEY.

The Government relies on Mr. Tannas's testimony that UCHIDA, STOLOV, and VERNEY suggest a plurality of filters at the local color display:

GOVERNMENT COUNSEL: So it's not the putting of a filter on a display what you claim was new in 1985?
MR. TANNAS: Right[.]

TR 1054.

* * *

GOVERNMENT COUNSEL: UCHIDA and [STOLOV] both have a first filter for filtering their blue color band for their local source of light?
MR. TANNAS: Correct.

TR 1059-60.

* * *

GOVERNMENT COUNSEL: UCHIDA and [STOLOV] both have a second filter for filtering the green color band. Right?
MR. TANNAS: That is correct.

TR 1060.

* * *

GOVERNMENT COUNSEL: [F]ilters like this CMFD lamp filter were known in 1985, right?
MR. TANNAS: Yes, they were.

TR 1149; *see also* TR 1171 ("It's very clear and distinct that [VERNEY is] suggesting that [the filter] be used to block the infrared on a color CRT.")

Nevertheless, Honeywell contests the Government's assertion that the prior art disclosed using separate filters for red, green, and blue. *See* Pl PT Op Def at 21 ("[T]he prior art fails to disclose making an NVG compatible full color display using separate filters for red, green and blue.") (citing PTX-834 ¶ 242 (Tannas)). UCHIDA, however, discloses a "liquid crystal multicolor display using color filters." DE 515 at GVT009-0486. STOLOV also discloses a LCD panel with "three filters of the colors red, green and blue." DE 519 Abstract. In fact, Mr. Tannas agreed that UCHIDA and STOLOV disclosed claims 2(a), 2(a)(1), and 2(a)(2):

GOVERNMENT COUNSEL: So each of these combinations, because they contain UCHIDA or [STOLOV], each of the combinations have a first filter for filtering the blue color band?
MR. TANNAS: That is correct[.]
GOVERNMENT COUNSEL: UCHIDA and [STOLOV] both have a second filter for filtering the green color band. Right?
MR. TANNAS: That is correct.

TR 1059-60.

Therefore, UCHIDA (DE 515) and STOLOV (DE 519) disclose claims 2(a), 2(a)(1), and 2(a)(2) of the '914 patent. The court, however, does not agree with the Government's assertion that Mr. Tannas admitted that VERNEY discloses claim 2(a). *See* Gov't PT Def at 34. Mr. Tannas agreed only that VERNEY

teaches using a single filter to block infrared light. *See* TR 1171 (Tannas) ("[I]t's very clear and distinct that [VERNEY is] suggesting that [the filter] be used to block the infrared on a color CRT."). Accordingly, the court has determined that VERNEY does not disclose claim 2(a).

(2) TASK ARTICLES.

Honeywell contends that TASK & GRIFFIN III does not disclose claims 2(a), 2(a)(1), and 2(a)(2) of the '914 patent. *See* Pl PT Op Def at 105-06 ("The Government failed to demonstrate that TASK & GRIFFIN III (DE-508) discloses 'a plurality of filters at the local color display.'"). DE 510 is a presentation based on the TASK ARTICLES. The court already has determined that TASK & GRIFFIN III does not disclose "a plurality of filters at the local color display including (1) a first filter for filtering the blue color band of the local source of light; (2) a second filter for filtering the green color band of the local source of light." Therefore, the TASK ARTICLES (DE 510) do not disclose claims 2(a), 2(a)(1), and 2(a)(2).

* * *

For these reasons, the court has determined that the following prior art references disclose claims 2(a), 2(a)(1), and 2(a)(2): UCHIDA and STOLOV.

> (c) Claim 2(a)(3): "A Third Filter For Filtering The Red Color Band Of The Local Source Of Light And Passing A Narrowband Of The Red Color Band."

(1) TASK & GRIFFIN I And KNIGHT & RITTER.

L-3 argues that TASK & GRIFFIN I discloses claim 2(a)(3), because the Glendale Green filter splits the red color band between 630 nm and 650 nm. *See* L-3 PT Def at 24 (quoting DE 500 ¶ 88) (Task) ("TASK [&] GRIFFIN I disclose[s] that the red color band should be split between 630 nm and 650 nm[.]"); DE 506 at GVT009-0476).

As previously discussed in the court's anticipation analysis, the Government has not established by clear and convincing evidence that the Glendale Green filter disclosed in TASK & GRIFFIN III passed a narrowband of the red color band. Moreover, TASK & GRIFFIN I does not explicitly state that the filter passes a narrowband of the red color band; instead, TASK & GRIFFIN I identifies the need for improvements to allow the filter to pass a narrow band of the red color band. *See* DE 506 at GVT009-0476 ("The laser safety material used for blocking the infra-red radiation from critical incandescent instrument lights needs to be improved to pass more visible light in the red region (630 nm) and to block the light better toward the far red and infra-red region (650 nm to 900 nm)."). Although some of the transmission spectra for various modifications of the Glendale Green filter in DE 516 show that a narrowband of the red color band is passed, all of the spectra have handwritten values and irregularly-spaced intervals on the x-axis. *See* DE 516 at LHM 0000466-474; PTX 834 ¶ 135 ("The wavelength values (in nanometers) are handwritten and irregularly spaced, and it is unclear how they came

to appear on the graph. To me, Figure 1 appears to be a laboratory scan generated to show the performance of the filter sample in a qualitative sense, not for the purpose of showing its spectral characteristics in any precise way."). Accordingly, the court has determined that the Government and Defendant-Intervenors have not established by clear and convincing evidence that TASK & GRIFFIN I & III disclose claim 2(a)(3).

Next, L-3 argues that KNIGHT & RITTER also discloses using a Glendale Green filter as the third filter in claim 2(a)(3). *See* L-3 PT Def at 14; *see also* DE 500 ¶¶ 148-49. The disclosure in KNIGHT & RITTER, however, is only a summary of tests discussed in the TASK & GRIFFIN ARTICLES. *See* DE 513 at GVT008-1997-98; *see also* DE 500 ¶ 149 ("In a section entitled 'Night Vision Test By Others' a summary is provided of the TASK & GRIFFIN III effort including the use of the Glendale Green filter and discusses the filtering of the moving map display."). Because KNIGHT & RITTER summarizes the findings of the TASK ARTICLES, the court has determined that KNIGHT & RITTER does not disclose claim (2)(a)(3) of the '914 patent.

(2) BOEHM.

L-3 also argues that BOEHM discloses claim 2(a)(3), because the BG-7 glass filters a narrowband of the red color band. *See* L-3 PT Def at 18 (citing DE 500 ¶ 130 (Task) ("BOEHM discloses the use of filters in front of the displays[.]"); *see also* DMX 4 at D000590). Honeywell responds that L-3 failed to produce clear and convincing evidence that the BG-7 filter would

pass a narrowband of the red color band, when combined with UCHIDA or STOLOV. *See* Pl PT Op Def at 68 ("L-3 . . . points to no evidence, much less clear and convincing evidence, that the BG-7 filter of BOEHM (DMX-4) would pass a 'narrowband of the red color band[.]'"). Moreover, Honeywell criticizes L-3 for not providing a spectral analysis, using a typical incandescent lamp emission curve with the BG-7. *Id.* at 68-69 (citing DE 500 at 64-65). In addition, Honeywell contends that Dr. Task never testified that BG-7 passes a narrowband of the red color band. *Id.* at 69 (citing DE 500 at 41, 64, 96; DE 526-18; DE 558). Even if Dr. Task had done so, a "narrowband of the red color band cannot be proven with a filter spectrum alone," because the BG-7 would filter the light from a full color display differently. *Id.* at 29, 69 ("An incandescent bulb is *not* a full color display."). For this reason, Mr. Tannas testified that if UCHIDA or STOLOV were filtered with BG-7, "the resulting display would not be a full color display." *See* PTX 834 (Tannas).

Although L-3 did not provide a separate spectral analysis, BOEHM discloses the wavelengths transmitted when an electro-luminescent is filtered by the BG-7. *See* DMX 4 at D000590 (graph); *see also id.* at D000588 ("The last diagram contains the relative luminance of low electroluminescent (EL) illuminations with blue and green colour and the transmission of a dyed-glass filter (BG 7) and a cut-off filter (OG 590)."). As the court previously determined, the red color band in claim 2(a)(3) is a range of color from 620 nm and 780 nm. *See Honeywell II*, 66 Fed. Cl. at 471. Dr. Task testified that BOEHM demonstrates that the BG-7 filter passes

"the red color band" from 620 nm to approximately 710 nm. *See* DE 500 at ¶ 88 ("BOEHM discloses a splitting of the red color band at about 710 nm[.]"); *see also id.* at ¶ 130 (charts). In addition, Mr. Tannas's calculations demonstrate that a TB-29 tri-band phosphor lamp filtered with the BG-7 filter would pass light in the red color band. *See* PTX 834 ¶¶ 403-05; *see also* PTX 937 (chart "BG-7 Filter, TB-29 Lamp, and Convolution"). Mr. Tannas also testified that, even if UCHIDA or STOLOV utilized a BG-7 filter, the result would not be a "full color display," because the BG-7 filter would "suppress red to such a degree that any red light passing through the filter would not be sufficient to provide the red primary of a full color display." PTX 834 ¶ 404. The court's claim construction, however, did not require the *perception* of the red primary of a full color display. *See Honeywell II*, 66 Fed. Cl. at 487 (defining "narrowband of the red color band" as "a narrow range of wavelengths within the red color band."). The "local color display" limitation of claim 2, however, requires that "at least one color [be] perceptible." *Id.* at 444. Therefore, claim 2 of the '914 patent requires only that the "local color display" emit light within a wavelength within the "red color band" *and* be perceptible. Claim 2 does not require that the color be *perceived* as red. For this reason, the court has determined that BOEHM discloses claim 2(a)(3) of the '914 patent.

(3) GERMAN PATENT

In addition, L-3 argues that the GERMAN PATENT discloses claim 2(a)(3). *See* L-3 PT Def at 13 (citing DE 500 at GVT007-0926; DE 500 ¶ 133

(Task)). Dr. Task testified that the GERMAN PATENT "provides one with skill in the art a recipe of how to design the two filters, their allowed passing and blocking wavelength bands and the amount of passing or blocking required." DE 500 ¶ 134. The GERMAN PATENT also "provides a specific example of a possible first filter and second filter set," where the first filter still passes measurable light at 650nm that is "well within the red color band." *Id.* at ¶¶ 136-37. Mr. Tannas also explains that the GERMAN PATENT does not disclose a filter for "passing a narrowband of the red color band," because the ' 914 patent states that "filter A only lets short-wave light of, e.g., ë < 600 nm, escape unfiltered[.]" PTX 834 ¶ 380 (quoting DE 505 at GVT007-0927). Based on the filters disclosed in the GERMAN PATENT, the transmittance of filter A at 620 nm approaches 0.01. *Id.* ¶¶ 381-83 ("[T]he 50% point for the filter is below 550 nm, and at 620 nm, the transmission is approaching 0.01. These are not the properties of a filter that passes a narrowband of the red color band[.]").

The court construed "the red color band" as a range of color from 620 nm and 780 nm. *See Honeywell II*, 66 Fed. Cl. at 471. The GERMAN PATENT, however, discloses that the first filter only lets light below 600 nm "escape *unfiltered* from the instrument display[.]" DE 505 at GVT007-0927 (emphasis added). The GERMAN PATENT also identifies a weak light flux between 650 nm and 900 nm is transmitted from the display through the first filter. *Id.* Therefore, the court agrees with Dr. Task's conclusion that one skilled in the art would understand that the first filter [of the GERMAN

PATENT] must transmit light between 600 nm and 650 nm. *See* DE 500 ¶ 137 ("The action of this display filter between 600 nm and 650 nm is not specifically identified in this example, but one skilled in the art would understand that filters cannot instantly go from completely passing to completely blocking but rather require some transition band of wavelengths[.]"). This testimony also demonstrates that the filter would allow the entire spectrum of the red color band to pass, and therefore, would not be a "narrowband of the red color band." *Id.* Accordingly, the court has determined that the Government and Defendant-Intervenors have not presented clear and convincing evidence that the GERMAN PATENT passes a "narrowband of the red color band."

(4) SCOUGHTON.

In addition, L-3 argues that SCOUGHTON discloses claim 2(a)(3). *See* L-3 PT Def at 14 (citing DE 522 at GVT009-0394; DE 500 ¶ 167). SCOUGHTON discloses a multifunction display ("MFD") with a pull down filter that allows the "discrimination of . . . yellow, blue and green." DE 522 at GVT009-0395. Dr. Task testified that "in order for yellow to be visible the filter must allow the transmission of some of the red phosphor light . . . because that is how one achieves yellow in this particular three-color shadow-mask CRT." DE 500 ¶ 168. Mr. Tannas, however, advised the court that "no conclusion can be reached without reliable spectral data showing the wavelengths of light emitted by the display and the amount of energy at each wavelength." PTX 834 ¶ 453.

SCOUGHTON does not disclose what wavelengths of light are passed through the filter. *See* DE 522. Moreover, the court considers Dr. Task's opinion that the filter *must have* transmitted some red light as mere conjecture. *See* DE 500 ¶ 168. Therefore, neither the Government nor Defendant-Intervenors have established by clear and convincing evidence that SCOUGHTON discloses a filter that "passes a narrowband of the red color band."

(5) VERNEY.

Finally, both the Government and Defendant-Intervenor argue that VERNEY discloses claim 2(a)(3). *See* Gov't PT Def at 34 (citing DE 511 at GVT009-0780; DE 500 ¶ 128); L-3 PT Def at 14 (citing DE 511 at GVT009-0780; DE 500 ¶ 128; TR 1548, 1584, 1660-61 (Task), 1158 (Tannas)). Dr. Task testified that VERNEY discloses a filter that "shows *excellent transmission* out to about 640 nm and *measurable transmission* out to about 700 nm." DE 500 ¶ 127 (emphasis in original) (citing DE 511 at GVT009-0780). Honeywell does not dispute that VERNEY discloses claim 2(3)(a). *See* Pl PT Op Def at 61-62. Mr. Tannas also agreed that "[VERNEY] is very close to the CMFD filter." TR 1158 (Tannas). Therefore, the court has determined that VERNEY discloses claim 2(a)(3).

* * *

For these reasons, the court has determined that the following prior art references disclose claim 2(a)(3): BOEHM, VERNEY, and SCOUGHTON.

(d) Claim 2(b): "A Fourth Filter Which Filters Light At The Night Vision Aid, Said Fourth Filter Cooperating With Said Plurality Of Filters To Substantially Block At Least Said Narrowband Of The Red Color Band From Being Admitted To The Night Vision Aid."

(1) BOEHM.

L-3 argues that BOEHM "discloses the use of filters that are placed over displays to pass shorter wavelengths of light in the blue and green spectrum combined with a NVG filter that can be used at 570 nm, 590 nm, or 630 nm depending on how much color is needed." L-3 PT Def at 15-16; *see also* DE 500 ¶ 130 ("BOEHM discloses the use of filters in front of the displays (BG-7 glass, Figure 3, DMX 4 at D000590) and different filters in front of the NVGs (OG-570, OG-590, and RG-630 cut-off filters, DMX 4 at D000603[.]). This is the same *complementary filter* concept discussed previously.") (emphasis in original).

Honeywell responds that L-3's argument that various filters "can be used at 570 nm, 590 nm, or 630 nm depending on how much color is needed" is in error, because BOEHM says nothing about "choosing these filters based upon 'how much color is needed[.]'" *See* Pl PT Op Def at 71 (citing DMX 4 at D000603; L-3 PT Def at 16). In addition, Honeywell asserts that BOEHM does not "suggest[] that the various NVG filters were even tested in the presence

of cockpit lights" and that L-3 interprets BOEHM in a manner inconsistent with both Dr. Task's and Mr. Tannas's testimony. *Id.* Moreover, Honeywell argues that the prior art must disclose "both a filter on a display and a filter on the NVGs, *both* of which must have a cut-off in the red color band." *Id.* at 72 (citing PTX 834 ¶ 262) ("The third and fourth filters of claim 2 . . . are used to 'split' the red color band, so that the third filter passes a 'narrowband of the red color band' and the fourth filter substantially blocks that narrowband of the red color band from being admitted to the night vision goggles").

BOEHM states that "[a]n OG 570, OG 590 . . . and an RG 630 cut-off filter from Schott have been successfully tested with the 2nd and 3rd generation NVG." DMX 4 at D000603. BOEHM further discloses that "NVG[s] can use cut-off filters in front of the objective lens." *Id.* at D000607. In addition, the RG 630 cut-off filter will block all wavelengths below 630 nm but allow wavelengths greater than 630 nm. *See* L-3 PT Def at 16 ("[A] NVG filter that can be used at 570 nm, 590 nm, or 630 nm."). As such, the court has determined that BOEHM discloses a "third filter for filtering the red color band of the local source of light and passing a narrowband of the red color band. Claim 2(b), however, does not require the prior art to disclose how to choose a filter based on "how much color is needed." Therefore, the court has determined that BOEHM discloses claim 2(b).

(2) TASK & GRIFFIN III.

L-3 also argues that TASK & GRIFFIN III discloses claim 2(b), because the red plastic filter

placed over the NVGs blocks light sufficiently to allow the NVGs to function properly. *See* L-3 PT Def at 30; *see also* DE 500 ¶ 111 ("[T]he red plastic filter mounted in an anti-flare baffle placed over the front lens of the NVGs . . . blocked the offending light sufficiently to permit the NVGs to function as intended.").

In the anticipation analysis, the court determined that TASK & GRIFFIN III did not disclose claim 2(b), because there was no disclosure of element 2(a)(3). In an obviousness inquiry, however, the court is required also to consider combinations of elements from prior art sources in determining whether a patent is valid. *See KSR*, 127 S. Ct. at 1739 ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results."). Therefore, here, it is not necessary for TASK & GRIFFIN III to disclose claim 2(a)(3) to disclose 2(b). Figure 8 of TASK & GRIFFIN III shows a comparison of NVG sensitivity with and without the red plastic filter. *See* DE 508 at DE-1615. This figure also shows that the addition of the red plastic filter makes the NVGs less sensitive to light than they would be in the red color band. *Id.* TASK & GRIFFIN III, however, only discusses the use of the red plastic filter in the context of making the NVGs compatible with light from a display that had been filtered to block all light from the red color band. *Id.* at DE-1615-16 ("To reduce the overlap still further, a red plastic filter was placed over the NVGs that was also highly transmissive in the near infra-red. . . . Under these conditions the emission of the display and the sensitivity of the NVG have almost no overlap; thus

effectively eliminating the interference of the display with proper operation of the NVGs."). Because TASK & GRIFFIN III does not discuss how the red plastic filter would work substantially to block a narrowband of the red color band nor explain how the red plastic filter would work in conjunction with a light source, the court has determined that TASK & GRIFFIN III discloses claim 2(b).

(3) GERMAN PATENT.

Next, L-3 argues that the GERMAN PATENT discloses claim 2(b) of the '914 patent. *See* L-3 PT Def at 13 (citing DE 505 at GVT007-0926; DE 500 ¶ 133). Specifically, Dr. Task testified that the GERMAN PATENT discloses "a second filter at the night vision aid that has the *complementary filtering* action, namely blocking the shorter wavelengths of light that were passed by the first filter[.]" DE 500 ¶ 133 (emphasis in original). Dr. Task also testified that the GERMAN PATENT disclosed claim 2(b) in two ways. *Id.* ¶¶ 134-38. First, the GERMAN PATENT provides a "recipe" to one skilled in the art "of how to design the two filters, their allowed passing and blocking wavelength bands and the amount of passing and blocking required, in order to successfully apply the invention." *Id.* ¶ 134 (citing DE 505 at GVT007-0926). Second, because an observer can read the instrument panel while looking through the NVG, the NVG is still functioning, and therefore, "substantially blocks" the narrowband of the red color band. *Id.* ¶ 138 (citing DE 5050 at GVT007-0923, 926). In other words, if the filter at the NVG did not substantially block a narrowband of the red color band, the NVGs would be overwhelmed and an observer would not be able to read the instrument

panel while using the NVGs. *Id.* ¶ 138; *see also* DE 505 at GVT007-0926 ("The invention makes it possible for a luminous indicating instrument to be read perfectly both from an observer with the naked eye and from an observer looking through a night-vision device."). On the other hand, Mr. Tannas testified that "the specification for [the second filter] is so broadly defined, it is impossible to determine what wavelengths are passed and blocked." PTX 834 ¶ 385. Mr. Tannas also pointed out that the second filter "could not block a 'narrowband of the red color band' because no such narrowband would be passed by filter A over the display." *Id.*

The court is satisified that Dr. Task identified how one skilled in the art, in1985, could determine that the GERMAN PATENT disclosed a filter at the NVG that "substantially block[ed]" a "narrowband of the red color band." *See* DE 500 ¶¶ 133-38. Mr. Tannas's broad assertion that it is "impossible to determine what wavelengths are passed or blocked," however, is not sufficient to rebut clear and convincing evidence to the contrary. *See* PTX 834 ¶ 385. Therefore, the court has determined that the GERMAN PATENT discloses claim 2(b).

(4) VERNEY.

Finally, the Government argues that VERNEY also discloses claim 2(b). *See* Gov't PT Def at 34 (citing DE 511 at GVT009-0780); TR 203 (Bradford); TR 352 (Reetz); *see also* TR 1056 (Tannas). VERNEY tested a filter with ANVIS NVGs. *See* Gov't PT Def at 34 (citing DE 511 at GVT009-0780). In 1985, ANVIS NVGs were known to contain minus-blue

filters. *See* TR 352 (Task) (testifying that ANVIS NVG had "[t]he 625 nanometer minus blue filter"); *see also* TR 1056 (Tannas). Therefore, the Government insists that the "filter *must have* 'substantially blocked' the narrowband of the red color band, as VERNEY notes that his filter permitted the goggles to function for their intended purpose." *See* Gov't PT Def at 33 (emphasis added) (citing DE 511 at GVT009-0780 (stating that light from the display can be seen in the NVGs without "adversely affecting their performance")).

Honeywell responds that Dr. Task's testimony that "VERNEY does not talk about a filter that is used over the night-vision goggles" directly contradicts the Government's assertions. *See* Pl PT Op Def at 62 (citing TR1696-97) (TASK) ("I don't remember . . . that there was an indication in here that he had used a filter over the night-vision goggles."). Moreover, neither Mr. Bradford nor Mr. Reetz discussed either VERNEY or the NVGs discussed therein. *See* Pl PT Op Def at 62. Although Mr. Bradford and Mr. Reetz discussed using a 625 nm cut-off filter for ANVIS NVGs, their testimony does not "compel[] the conclusion that the ANVIS referenced in VERNEY had a 625 nm cutoff filter." *Id.* (citing TR 158 (Bradford); TR 338, 340, 352 (Reetz)). In addition, Honeywell points out that there is evidence in the record "demonstrating that the minus blue filters on ANVIS goggles had a cutoff at 600 nm, not 625 nm[.]" Pl PT Op Def at 62-63 (citing DE 517 at GVT055-000016 ("for the third generation ANVIS . . . a filter is applied to the [lens] which yields a sharp cutoff of sensitivity near 600 nanometers")).

Therefore, the court has determined that the Government proffered no evidence that VERNEY disclosed a "fourth filter" that "substantially blocks" a "narrowband of the red color band." Instead, the Government relied on Dr. Task's conjecture that the ANVIS goggles discussed in VERNEY would have a 625 nm cutoff. On the other hand, Honeywell proffered evidence that the ANVIS goggles discussed in VERNEY must have had a 600 nm cutoff. *See* DE 517 at GVT055-000016. For these reasons, the court has determined that the Government and Defendant-Intervenors did not establish by clear and convincing evidence that VERNEY discloses claim 2(b).

* * *

For these reasons, the court has determined that the following prior art references disclose claim 2(b): BOEHM and the GERMAN PATENT.

ii. Considerations Of The '914 Patent As A Whole.

As discussed above, the Government and Defendant-Intervenors have demonstrated by clear and convincing evidence that all of the elements of claim 2 were disclosed by prior art. This ruling, however, is not dispositive, because the obviousness inquiry "requires a series of factual assessments culminating in an often-difficult qualitative judgment of the creative achievement involved in the invention." ADELMAN, *supra*, at 309. Therefore, the court also must examine the claimed invention "as a whole," through the eyes of "a person having ordinary skill in the art." 35 U.S.C. § 103(a); *see also*

In re Translogic Tech., Inc., 504 F.3d at 1257 ("An invention is unpatentable as obvious if the differences between the patented subject matter and the prior art would have been obvious at the time of invention to a person of ordinary skill in the art.") (citing *In re Gartside*, 203 F.3d 1305, 1319 (Fed. Cir. 2000)) ("A claimed invention is unpatentable as obvious if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.") (quotation omitted); ADELMAN, *supra*, at 309 ("To avoid undervaluing the combination, section 103 requires the obviousness assessment to compare the invention as a whole to the prior art."); *see also id.* at 310 ("[T]he . . . court must make the determination from the vantage point of a 'person having ordinary skill in the art.'"). Accordingly, even if prior art did not disclose all the elements, the court could still determine that the '914 patent was obvious.

(a) Prior Art Combinations.

(1) The Parties' Arguments.

L-3 argues that BOEHM, when combined with UCHIDA or STOLOV, renders claim 2 obvious. *See* L-3 PT Def at 14-15. L-3 contends that BOEHM "identifies a method of complementary filtering for helicopter pilots to use NVGs and when needed to look down to view a color display with the naked eye." L-3 PT Def at 15 (citing DE 500 at 64; DMX 4). Therefore, combining BOEHM with the full color display disclosed in UCHIDA or STOLOV would render claim 2 of the '914 patent obvious. *See* L-3 PT Def at 18 (chart). In addition, L-3 argues that VERNEY and TRIMMIER provide the motivation to combine BOEHM with other references. *See* L-3 Def Reply at 31-32 ("[T]he elements disclosed in the BOEHM reference ("A") combined with UCHIDA ("B") in light of the suggestions to combine NVG filtering and LCDs from VERNEY ("C") [DE-511 GVT009-0782] is sufficient to establish obviousness. VERNEY, however, is not the only motivating reference. TRIMMIER also suggests the combination of NVG compatibility techniques with LCDs.").

Honeywell responds that BOEHM, when combined with UCHIDA or STOLOV, is not obvious, because: (1) BOEHM did not combine complementary filters and full color CRT displays; (2) the combination of BOEHM with UCHIDA or STOLOV does not demonstrate the obviousness of using separate filters for red, green, and blue and does not have a "narrowband of the red color band;" and (3) L-3 mischaracterizes the teachings of BOEHM. *See* Pl PT Op Def at 65-73. BOEHM does not teach: (1) complementary filtering when viewing a color display with the naked eye; (2) the use of filters placed over displays; (3) choosing the type of filter at

the NVG based on "how much color is needed;" (4) that the "good coloured image" was produced by filtering the display or reducing the red level (*i.e.*, "splitting the red color band"); and (5) "how the system may be applied to liquid crystal displays." *See* Pl PT Op Def at 70-73.

L-3 counters that the obviousness inquiry does not require an inventor to combine the elements and that Honeywell is attempting to turn the obviousness inquiry into an anticipation inquiry. *See* L-3 Def Reply at 32 ("Thus, Honeywell asserts that if the invention is not fully implemented in the prior art it is non-obvious. Again, this is a discussion of anticipation, not obviousness."). L-3 further argues that the inventor of the '914 patent never actually combined LCDs with complementary filtering. *Id.* at 33 ("While Honeywell criticizes BOEHM and other references for failing to combine complementary filtering and LCDs like UCHIDA, it should be noted that such a combination was never made by the '914 inventor[.]") (citing DE 54 at 441 (Cohen Dep.)). As for Honeywell's separate red, green, and blue filter argument: "[al]though BOEHM does not describe the green and blue filter specifically, it suggests their combination with its disclosure by referencing LCDs specifically" and "[a] person of ordinary skill in the art then would be motivated to use LCDs as a display, and make those LCDs NVG compatible[.]" *Id.* BOEHM also passes a "narrowband of the red color band." *Id.* at 34-38. In addition, BOEHM discusses viewing a cockpit display with a naked eye. *Id.* at 40 (citing DMX 4 at D000588-89 (stating that "pilots have . . . developed helmet-mounted NVG. The reason for this development is that the pilot can look

around the goggles into the cockpit and onto the instrument panels in front of him with the 'naked eye.'")). BOEHM, however, did not specifically disclose that a 570 nm, 590 nm, or 630 nm filter could be used depending on the color needed, because one skilled in the art, in 1985, would understand how to use the various filters. *Id.* at 40. On the other hand, BOEHM discloses splitting the red color band, as it "describes filtering the NVGs" and "filtering cockpit illumination, such as LCDs." *Id.* at 41 (citing DMX 4 D00[illegible]00, 600). Therefore, L-3 concludes that BOEHM does not need to describe how the system works with LCDs, because "[t]he Court need only determine whether a person of ordinary skill in the art could apply BOEHM's reference to LCDs such as UCHIDA, and combine them." *Id.*

The Government adds that VERNEY, as interpreted by Mr. Tannas, also renders claim 2 obvious.[30] *See* Gov't PT Def at 32 ("Combining [Tannas's] admissions with the teachings of VERNEY leads to the conclusion that claim 2 also would have been obvious[.]"); *see also* L-3 Def Reply at 34-38. VERNEY discloses the claim 2 Preamble, claim 2(a)(3), and claim 2(b), and Mr. Tannas's testimony discloses all the elements of claim 2. *See* Gov't PT Def at 33-34 (chart). In fact, Mr. Tannas's testimony characterized the "geniusness," or what separates the '914 patent from the prior art, as "the interaction

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[30] The Government also argues that the REETZ THESIS combined with UCHIDA or STOLOV would make claim 2 obvious. *See* Gov't PT Def at 27. The court has already determined that the REETZ THESIS is not prior art.

of the 'third filter' and 'fourth filter.'" *Id.* at 35 (citing TR 1352) (Tannas) ("So the geniusness of it comes into that hint - that little clue that says there's going to be success here if you do this little trick."). VERNEY also discloses the "geniusness" of the interaction between the third and fourth filter, making claim 2 a "combination."

Honeywell counters that claim 2 "would not have been obvious in view of VERNEY alone," because: (1) that argument is not supported by Dr. Task; (2) VERNEY fails to suggest separate filtering of red, green, and blue and does not suggest a fourth filter at the NVG; and (3) VERNEY "takes a different approach," as it teaches "the conventional wisdom that 'red or white integral lighting systems cannot be activated while the pilot is using NVGs due to their adverse interaction' and therefore integral lighting must be corrected to be 'blue-green in color' with 'minimal energy between 600 and 950 nanometers.'" Pl PT Op Def at 60-64 (citing DE 511 at GVT009-0773, 0780; PTX-834 ¶ 427-29; TR 1166 (Tannas)). Instead, VERNEY teaches a "combination of an infrared blocking filter and dimming" and that "red light should 'stand[] out in the NVG,'" instead of blocking the red light from the NVG. *Id.* at 64-65 (citing DE 511 at GVT009-0780; TR 1162-63 (Tannas)). Consequently, one of ordinary skill in the art, in 1985, would understand that "the red warning light would have to be dimmed to a level where it is not perceptible to the human observer." Pl PT Op Def at 65 (citing TR 1396-97 (Tannas); *see also* TR 1694 (Task) ("I don't know how far you would have to dim it down" in order not to adversely affect the performance of the NVGs.)).

Therefore, when the patent-in-suit is viewed as a whole, the Government and Defendant-Intervenor's prior art combinations fail to disclose: "a display that is both full color and NVG compatible; a filter at the display that passes a narrowband of the red color band, and a filter at the NVGs that blocks that narrowband; and an NVG compatible display having separate filters for red, green and blue." Pl PT Op Def at 22. In 1985, no one "achieved night-vision goggle compatibility with a full color display." *Id.* at 18 (citing TR 281-82) (Dunn) (testifying that he was not aware of anyone who had achieved this compatibility); *see also* SA TR 883-84 (Reetz) (HONEYWELL COUNSEL: "In late 1985 and early 1986, just at the time the original spec came out, did you use complementary filtering on full color displays in that time period?" REETZ: "I'm going to say no, we did not."); *see also* DE 500 ¶ 32 (Task) ("The court may wonder, if it was so obvious to apply known complementary filtering techniques to color CRTs and LCDs in 1985, why is there no such application shown in the prior art?").[31]

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[31] Dr. Task anticipated this question in his direct testimony:

> The answer is that there were few full color displays and no full color LCDs and CRTs in cockpits in 1985. The existing aviator NVGs and practical choices regarding daylight readability of the displays or the cost to retrofit existing aircraft played significant roles in the pace of the introduction of NVGs and full color cockpits. In addition, the military specification process to govern procurement of compliant military cockpits and goggles required consensus and coordination among the military branches. These, among other reasons

In addition, Honeywell asserts that BOEHM and VERNEY fail to suggest any method for making a "display NVG compatible while retaining its full color capability." Pl PT Op Def at 19. "[P]lacing a full color display in a cockpit" is an "advantage of the '914 invention that distinguishes it from the prior art." *Id.* (citing *United States* v. *Adams*, 383 U.S. 39, 48 (1966) (stating that "the fact that the Adams battery is water-activated *sets this device apart from the prior art*" even though "[i]t is true that claims 1 and 10 . . . do not mention a water electrolyte") (emphasis added)). The prior art also does not disclose "a narrowband of the red color band emitted by the display that is blocked at the NVGs," because the prior art does not disclose how this complementary filtering technique should be implemented. *Id.* (citing PTX 834 ¶ 243) ("[N]one of the references relied upon by Task discloses or suggests the way to achieve an NVG compatible full color display devised by the inventors, namely . . . splitting the red color band[.]"). In other words, "[t]he claimed 'third filter' . . . is designed, unlike the prior art, to work in combination with an appropriate full color display light source, to allow a narrowband of the red color band to pass through." *Id.* at 21. Therefore, the "invention does not simply unite old elements with no change in their respective functions." *Id.* (citing *KSR*, 127 S. Ct. at 1739). Moreover, Honeywell contends that "[n]either the

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discussed below, explain the pace of the military's use of NVGs with full color CRTs or LCDs.

DE 500 ¶ 32.

Government nor L-3 points to anything in the prior art or elsewhere suggesting the use of separate filters for red, green and blue for making an NVG compatible full color display." *Id.* In sum, Honeywell's arguments are that the prior art combinations fail to disclose: "a display that is both full color and NVG compatible; a filter at the display that passes a narrowband of the red color band; and a filter at the NVGs that blocks that narrowband; and an NVG compatible display having separate filters for red, green and blue." *Id.* at 22.

L-3 responds that the court's claim construction only requires "[a] device that may be used together or in combination with optical filters and shows or exhibits at least *one color* perceptible to an observer[.]" *See* L-3 PT Def at 20 (quoting *Honeywell II*, 66 Fed. Cl. at 444) (emphasis added). Honeywell does not contest the court's claim construction, but counters that the Government conceded that the invention was "placing a full color display in a cockpit." *See* Pl PT Op Def at 19 (quoting Gov't PT Def at 20). Moreover, Honeywell's arguments, that a NVG compatible full color display was not achieved in 1985 and neither BOEHM nor VERNEY discloses a NVG compatible full color display, are not relevant to the court's obviousness analysis. *See* L-3 Def Reply at 26 ("Whether a prior art reference contains all the elements of a claim is the analysis of the anticipation defense under § 102 rather than obviousness under § 103."); *see also id.* (Reetz and Dunn, however, "were noting simply that no one was practicing the invention on a full color display, but they did not suggest that a person of skill in the art would not find complementary

filtering -- of full color displays -- obvious."). TRIMMIER, however, "suggests a 'full color (NVG compatible)' display" and the GERMAN PATENT "provides a precise formula for making a display NVG compatible at any wavelength, including wavelengths for full color displays." *Id.* (citing DE 500 ¶¶ 134-35; DE 505 at GVT007-0926; DE 514 at GVT018-1667).

Both the Government and L-3 contend that Honeywell's arguments are simply combinations of elements of claim 2. *See* Gov't Def Reply at 10-11 ("[T]he second two [arguments] are actually combinations of two or more elements of claim 2 . . . [t]he first 'difference' . . . appears to be the title of the patent, as opposed to elements of claim 2."); *see also* L-3 Def Reply at 27 ("[E]ach of Honeywell's proposed 'missing elements' is actually a combination of two or more elements."). The essence of Honeywell's argument is that there is no *one* piece of prior art that discloses *multiple* elements of the '914 patent, instead of arguing that the prior art could not be combined to achieve the invention in the '914 patent. *Id.* As such, Honeywell's argument is not consistent with *Graham*, "which requires a court to determine which elements are present in the references and how it would be obvious for a person of skill in the art to combine those references." *Id.* (citing *KSR*, 127 S. Ct. at 1734 (quoting *Graham*, 383 U.S. at 17-18)); *see also* Gov't Def Reply at 11 ("[In *KSR*], [t]he Supreme Court found that the difference between the prior art and the claimed invention was merely that the 'puzzle pieces' in the prior art had not been combined to reach the claimed invention." (citing *KSR*, 127 S. Ct. at 1742)). L-3 adds that

"complimentary filtering" also was not disclosed by a sole prior art reference, because: "(1) the initial compromise was to allow greater NVG abilities by reducing color in the cockpit; (2) most cockpits were not using color displays such as LCDs or CRTs at the time; and (3) the full color displays at the time had difficulties with daylight readability." L-3 Def Reply at 26-27 (citing TR 362-63 (Reetz); TR 233, 239-244 (Dunn)).

(2) The Court's Resolution.

BOEHM teaches all of the elements of claim 2, except for a "plurality of filters at the local color display." *See* Section II.C.3.d., *supra*. BOEHM also teaches "complimentary filtering" and it is evident that color displays described in UCHIDA and STOLOV could have been considered for use in aircraft prior to 1985. *See* DE 515 at GVT009-0486 (as of 1981, LCDs were "increasingly being used in portable instruments"). The fact that BOEHM did not apply complementary filtering to full color displays is not dispositive, however, since the trial court may:

> look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, *all* in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

KSR, 127 S. Ct. at 1740-41 (emphasis added). Accordingly, in this case, the court discerns little difference between the prior art combinations and the claimed invention "as a whole."

Moreover, combining BOEHM with UCHIDA or other prior art to demonstrate the obviousness of using red, green, and blue filters does not require "hindsight reconstruction." *See* Pl PT Op Def at 67 ("But it would be clear error to combine these references merely because 'the court requires more' than just BOEHM (DMX-4) to find all elements of the claim." (citing *Grain Processing Corp.* v. *Amer Maize-Prod. Co.*, 840 F.2d 902, 907 (Fed. Cir. 1988) ("Care must be taken to avoid hindsight reconstruction by using 'the patent in suit as a guide through the maze of prior art references[.]'" citation omitted)); *see also id.* at 28 ("The Government's analysis is not based upon 'ordinary' skill and creativity that existed in 1985, but is aimed at reconstructing claim 2 of the '914 patent through hindsight."). Accordingly, the court has determined that BOEHM disclosed all of the elements of claim 2 of the '914 patent, except for the use of red, green, and blue filters. The court also has determined that UCHIDA and STOLOV disclosed the blue and green filter requirements of claim 2(a), and that BOEHM, the GERMAN PATENT, and VERNEY disclosed the requirements of claim 2(a)(3). More importantly, the identification of the plurality of filters was not the "genius" or inventive aspect of the '914 patent. As Mr. Tannas testified:

MR. TANNAS: Engineers and one skilled in the art know that they could put filters on anything at any time in any way. So I put that question in that

category. It's not a teaching or a fundamental issue. And all of the experiments that were going on, everybody was putting different kinds of filters on different kinds of things, but apparently they didn't feel it was necessary in the Reetz study. If it were of interest, they would have done it. But apparently it wasn't of interest or of concern in the Reetz study because it was so obvious that anybody could put filters on any of them.

TR 1080.

* * *

GOVERNMENT COUNSEL: Now, do you know whether the teachings, as you have opined about them, of the '914 patent, [c]laim 2, could have been practiced by one skilled in the art in -- or prior to October of 1985 with off-the-shelf available technology?
MR. TANNAS: I would -- no. It's my opinion that all of those filters that were used were available someplace in the industry. The patent didn't invent the filter.

TR 1347.

* * *

MR. TANNAS: I could go on further. When you ask about nothing new, the inventor didn't invent night vision goggles. He did not invent full color displays. He didn't invent red, blue and green primaries. He invented a system to make them work together in a unique way better than anyone else had ever done.

L-3 COUNSEL: Well, the system -- by the way, what was it unique about the way it's done? Is it what you've described as these especially sharp filters?
MR. TANNAS: *He was able to filter the red color band - split the red color band so that there was enough red so that the full color display could still act as a full color display when viewed by the unaided eye and that the night vision goggle would [be] satisfactory to its vision requirements.*

TR 1348 (emphasis added).

Therefore, the court has determined that Government and Defendant-Intervenors have established by clear and convincing evidence that prior art combinations, in 1985, disclosed all the elements of claim 2 of the '914 patent when viewed as a whole.

(b) Obvious To Combine The Prior Art.

(1) The Parties' Arguments.

Next, the Government and L-3 argue that it would have been obvious to one of ordinary skill in the art, in 1985, to combine the prior art references to solve the problem addressed by the '914 patent. *See* Gov't PT Def at 18-26; *see also* L-3 PT Def at 9-12, 37-42. The Government lists each of the steps that one skilled in the art in 1985 would take to combine the elements in claim 2, tracking Dr. Task's testimony. *See* Gov't PT Def at 20-21 ("The testimony at trial established that the skilled artisan would investigate several 'known options,' when faced with

the design need of placing a full color display in a cockpit, and making the display compatible with a pilot's night vision goggles[.] . . . This is exactly the thought process mirrored by Dr. Task in his direct testimony. Dr. Task selected several 'primary references' that taught complementary filtering on cockpit displays.") (citing DE 500 ¶¶ 100-172). One skilled in the art at that time would undertake the following steps:

> 1. The artisan would study various known technologies for creating a full color display;
>
> 2. He would apply to these known technologies the standard technique for night vision goggle compatibility, the complementary filtering method described throughout the prior art; and
>
> 3. The artisan would choose appropriate filters to make complementary filtering work with the displays being studied, to produce the desired full color display.

Id. (citing DE 500 ¶¶ 100-172).

Likewise, one skilled in the art, in 1985, would understand complementary filtering. *See* L-3 PT Def at 9 ("In the early 1980s those working in the field were very familiar with complementary filtering and its ability to reduce interference from cockpit lighting." (citing TR 425 (Reetz); TR 1539-40 (Task))); *see also* Gov't PT Def at 22 ("It is undisputed that a person of ordinary skill in 1985

would also have been aware of complementary filtering as a technique for making light sources compatible with night vision goggles."). One skilled in the art, in 1985, also would rely on disclosed methods of complementary filtering. *See* L-3 PT Def at 37-38 ("[Dr.] Task testified that at least eight different combinations of those references could be used to satisfy the elements of [c]laim 2, [relying on techniques] and the disclosure of[:] VERNEY (DE-511)[;] BOEHM (DMX-4)[;] or TRIMMIER (DE-514) for motivation to modify or combine the references."); *see also* Gov't PT Def at 23 ("The artisan, investigating this technique, would find the numerous references cited by Dr. Task that thoroughly discuss the technique and methods[.]" (citing DE-500 ¶¶ 91-98; DE-504-10; DE-513; DE-521; DE-301; DMX-4)).

At trial, each of the Government's witnesses testified that, in 1985, they were aware of using complementary filtering to reduce lighting interference. *See* TR at 141, 148-50 (Bradford); 261-63 (Dunn); 425 (Reetz); DE 500 ¶¶ 21, 38, 1539-40 (Task). In particular, L-3 relies on a memo written by the inventor of the '914 patent to demonstrate "the extensive community knowledge of this complementary filtering technique, including splitting the red band, and how red wavelengths were compatible with NVGs in cockpits, even a year prior to the claimed invention date." L-3 PT Def at 10. For example, at a conference in 1984, Mr. Cohen was told that "night vision systems 'should not

remove all red,' that Sikorsky[32] was using a system with 'IR suppressed red lights which are compatible with NVG,' and that WAMCO could provide Cohen with 'NV filters . . . which will provide some red with NV compatibility.'" *Id.* (citing DE 57 H03235 (Cohen Memo)).

L-3 adds that the aircraft technical community, in 1985, recognized an "engineering trade off between maximizing goggle performance and allowing in more colors." L-3 PT Def at 10 (citing TR 1547-50, 1597, 1698 (Task)); *see also* L-3 PT Def at 11 ("Allowing more red light in the cockpit was simply an engineering choice between night vision sensitivity and the need for red lighting." (citing TR 362 (Reetz); TR 1597, 1698 (Task))). Therefore, the aircraft technical community did not decrease NVG sensitivity at that time, because there were "very few, if any, full color displays in military aircraft as Honeywell has defined them, *i.e.*, displays using LCDs." *Id.* at 11 (citing TR 361 (Reetz); TR 978 (Lawrence); PTX 834 ¶ 252 (Tannas)). Prior to 1985, full color displays were not used because of daylight readability issues. *See* Gov't PT Def at 21 (citing TR 242-45 (Dunn) ("[B]right sunlight shining on cockpit displays at high altitude tended to 'wash out' the color displays and make them unreadable.")); *see also*

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[32] Although not in the record, "Sikorsky Aircraft Corporation is a world leader in the design, manufacture and service of military and commercial helicopters; fixed-wing aircraft; spare parts and maintenance, repair and overhaul services for helicopters and fixed-wing aircraft; and civil helicopter operations." About Sikorsky, http://www.sikorsky.com/sik/about_sikorsky/index.asp.

L-3 PT Def at 12 ("The technical hurdle that prevented full color displays from being used in the military cockpit was not NVIS compatibility, it was making the displays daylight readable, a technical issue *not addressed* by the claimed invention." (emphasis added) (citing TR 233 (Dunn))). Moreover, even after the visibility problem was addressed, aircraft technical "engineers quickly integrated NVGs by simply measuring the required wavelength cutoff needed and ordering the filters off the shelf." L-3 PT Def at 12 (citing DE 500 at 93-94; TR 262-63 (Dunn); DE 57 H03235 (Cohen Memo)).

Finally, the Government argues that one skilled in the art, in 1985, would be able to select a third and fourth filter to achieve a full color display compatible with NVGs. *See* Gov't PT Def at 24. As such, Mr. Bradford testified that he tested filters with cut-offs between 600 nm and 900 nm and that selecting the "right" filters was a matter of "mathematics and physics." *See* TR 147-48, 263 (Dunn). Moreover, Mr. Tannas testified that:

- The use of filters with NVGs and displays was well within the level of ordinary skill in the art. *See* TR 1080 ("Engineers and one skilled in the art know that they could put filters on anything at any time in any way.")

- Using filters to filter color bands other than red was known in 1985. *See* TR 1057, 1059-60 (admitting that filtering of green and blue color bands was known).

- The filters as used in claim 2 were widely available to the industry as off-the-shelf technology. *See* TR 1347 ("The patent didn't invent the filter.")

- There was nothing different about filtering the red color band, as opposed to other color bands. *See* TR 1347 (L-3 COUNSEL: "And there's noting scientifically different about filtering a portion of the red color band from, for example a portion of the blue color band, correct? MR. TANNAS: "No.").

Therefore, the Government concludes that the '914 patent did not need to disclose how to select the appropriate filters. *See* Gov't PT Def at 25. As Mr. Tannas testified:

L-3 COUNSEL: Well, [the patent] tells you what the goal is, which is splitting the red color band, as you said, but it doesn't tell you how to make a display system and a filtering system do that, does it?
MR. TANNAS: No, it does not. And I don't think it has to. One skilled in the trade, as defined by the courts, could pick this up and do it, I believe firmly.

TR 1354.

Honeywell counters that "ordinary skill in the art in 1985 would not have been sufficient to bridge the gap between the prior art and the patented invention." *See* Pl PT Op Def at 27. More importantly, the Government's analysis does not comply with *Graham*, because "the Government

supplants [the obviousness inquiry] with its own improper and unsupported three-part inquiry" that relies on hindsight. *Id.* at 27-28 ("For example, the Government provides no explanation for why one of ordinary skill in the art would suddenly decide, breaking away from the prior art, that the red color band should be filtered to pass a narrowband of the red color band."). The filters known, in 1985, would "not have passed a narrowband of the red color band." *Id.* at 28. Therefore, the Government and Defendant-Intervenors provided evidence only of light being transmitted through a filter by an incandescent bulb, while Honeywell was able to demonstrate that "the prior art complementary filters would not pass a 'narrowband of the red color band[,]' when combined with a full color display." *Id.* at 29 (citing PTX 834 ¶¶ 324, 397; TR 1149-50 (Tannas) (testifying that if CS-4-94 filter were applied to a full color display in 1985, "[i]t [would] greatly diminish[] the red and change[] the whole character of the display . . . you would have goggle compatibility you just wouldn't have a full color display anymore")). Moreover, the BG-7 transmission spectrum is not relevant, because the display "merely shows the transmission spectrum for the filter, not the spectrum of light emitted by the display." *Id.* at 30. Finally, Honeywell argues that one skilled in the art, in 1985, would not have chosen the third and fourth filters of claim 2, because: "there is no evidence that one of ordinary skill in the art would have used filters having different functionality than those described in the prior art references." *Id.* at 31. One of ordinary skill in the art, in 1985, would not have understood that "a full color display could be achieved by using a filter that passes a narrow band

of the red color band." *Id.* at 36. Moreover, "[c]ontemporaneous and prior art documents indicate that there was a great deal of uncertainty surrounding whether it would have been possible to make a full color display NVG compatible while retaining its full color capability." *Id.* at 39.

(2) The Court's Resolution.

To assist the court in viewing the invention as a whole through the eyes of the person of ordinary skill in the art, the United States Court of Appeals for the Federal Circuit developed the TSM test. *See In re Bergel*, 292 F.2d 955, 956-57 (C.C.P.A. 1961) ("The mere fact that it is possible to find two isolated disclosures which might be combined in such a way to produce a new compound does not necessarily render such production obvious unless the art also contains something to suggest the desirability of the proposed combination."). In *KSR*, the United States Supreme Court recently declined to set aside the TSM test, but held that a "rigid and mandatory" application of the TSM test is "incompatible" with precedent. *See KSR*, 127 S. Ct. at 1741. The Court observed that:

> a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, *it* [*also*] *can be important to*

> *identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.* This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Id. (emphasis added).

Additionally, in considering whether it would be obvious, in 1985, to one of ordinary skill to combine the prior art references discussed herein, the court must avoid hindsight reconstruction but should not consider whether one of ordinary skill in the art, in 1985, starting with a "blank slate," would have elected to use the teachings of BOEHM and VERNEY in conjunction with UCHIDA or STOLOV. *See KSR*, 127 S. Ct. at 1744 ("The Court of Appeals considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones . . . disclosed in the '068 patent."). Instead, the court must determine whether one skilled in the art, in 1985, "facing the wide range of needs created by developments in the field of endeavor," would have combined the filters. *See KSR*, 127 S. Ct. at 1744; *see also In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) ("[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on evidence before the time of invention.").

Therefore, the court is required to determine whether it would have been obvious to a person "knowledgeable about night vision compatible aids, compatible instrument and panel lighting, and manufacturing displays for military cockpits" to combine the prior art elements in a manner to achieve the solution of the '914 patent. *See Honeywell II*, 66 Fed. Cl. at 428; *see also KSR*, 127 S. Ct. at 1744 ("The proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor.").

The court is aware that: "the interaction of multiple components means that changing one component often requires that others be modified as well." *KSR*, 127 S. Ct. at 1744. In this case, the first component requiring change, in 1985, was the full-color LCD look down display. *See* DE 500 ¶ 205 ("When LCD displays were deemed daylight readable and functional for cockpit use, the same logic was applied to place an NVIS filter to reduce the longer wavelengths of red and infra-red that interfered with the NVGs."). After daylight readability issues were resolved, full color displays, *i.e.*, LCDs, could be used in aircraft cockpits. *Id.*; *see also* DE 515 at GVT009-0486 (stating that LCDs were "increasingly being used . . . in portable instruments"). Therefore, the record evidences that visibility and other military requirements were the driving forces for not using full color displays and red lighting in aircraft cockpits. *See* TR 247 (Dunn) (GOVERNMENT COUNSEL: "And did monochrome displays present the same daylight readability issues as full color

displays?" MR. DUNN: "Well, no, they didn't, because monochrome CRTs and certainly the ones in the aircraft did not contain shadow mask."); *see also* DMX 4 at D000597 ("[A] blue/green illuminated cockpit is not as easy to detect[.]"). For an inventor faced with the problem of integrating a full color display into an NVG-compatible cockpit, the issue would be how to filter the light that interferes with the function of the NVGs. Both BOEHM and the GERMAN PATENT demonstrate the concept of using a combination of filters at the display and at the NVGs to allow an operator to "look around" the NVG. *See* DMX 4 at D000589 (diagram); *see also id.* at D000607 ("NVG[s] were successfully tested with a colour MFD (HDD) and a CGI simulator."); DE 505 at GVT007-0922 ("To observe a luminous indicating instrument it is suggested that a first filter be placed in front of the instrument and that first filter have a long-wave blocking limiting frequency that lies below the short-wave blocking limiting frequency of a night-vision device set in front of the second filter."). Therefore, Honeywell's argument is reduced to whether, in 1985, one skilled in the art could: "split the red color band so that there was enough red so that the full color display could still act as a full color display when viewed by the unaided eye and that the night vision goggle would [be] satisfactory to its vision requirements." TR 1348 (Tannas). Honeywell proffered a chart and testimony to demonstrate that the Glendale Green filter, the REETZ THESIS filter, the LLOYD filter, and the BOEHM filter did not specifically disclose filters that can "split the red color band." *See* PTX 916 (chart); *see also* PTX 834 ¶ 244. Honeywell, however, neglected to mention VERNEY and the GERMAN PATENT. *See* PTX 834 ¶¶ 243-45. VERNEY

disclosed a filter nearly identical to the one found in the infringing CMFD. *See* DE 500 at 63 (chart); *see also* DE-526-19c (chart). In addition, Dr. Task confirmed that the GERMAN PATENT "provides one with skill in the art a recipe of how to design the two filters, their allowed passing and blocking wavelength bands and the amount of passing or blocking required, in order to successfully apply the invention." *See* DE 500 ¶ 134. In response, Mr. Tannas testified only that "filter B is so broadly defined, it is impossible to determine what wavelengths are passed and blocked." PTX 834 ¶ 385.

Assuming, *arguendo*, that VERNEY and the GERMAN PATENT did not disclose how to "split the red color band," the record evidences that one skilled in the art, in 1985, could have determined which filters to use. First, Mr. Tannas admitted that, after one skilled in the art, in 1985, identified the need to split the red color band, determining the appropriate filters to use also would be known. *See* DMX 4 at D000590 (Figure 3). In fact, such filters were available on the market at that time. *See* TR 1347-49. Mr. Tannas also confirmed:

L-3 COUNSEL: Well, the patent doesn't state anything about how steep or sharp the filter has to be, does it?
MR. TANNAS: No, it does not. It just says split the red color band and divide it up between the night vision goggle and the viewer. So the [genius] of it comes into that hint -- that little clue that says there's going to be success here if you do this little trick. And sometimes these things really do boil

down to just a little minutia but it's minutia that pushed the industry over so that they could make them fully compatible with full color displays.

TR 1352.

* * *

L-3 COUNSEL: The claim -- the patent doesn't say how steep the filter has to be, it doesn't specify filter, correct?
MR. TANNAS: No. I think it's up to the person implementing the concept to make it as steep as he needs to.
L-3 COUNSEL: It doesn't say how much gap there should be between a red right pass or block, correct?
MR. TANNAS: No. That would depend heavily on the light source -- where the energy was in the light source.
L-3 COUNSEL: And it doesn't say anything about where to draw the cutoff point in the red spectrum, correct?
MR. TANNAS: No, it doesn't. So now you have to go on designing the thing. So it really doesn't tell you how to design it.
L-3 COUNSEL: It doesn't tell you how to make the device that is the subject of the claims, does it?
MR. TANNAS: It tells you how to make it. It says split the red color band. Now, the detail of implementing that is another step. And then after you do that, then you go to another step, divide the filters. And after you do that, you go into the laboratory and do some tests. There's quite a bit of work to do after this concept is put forward.

L-3 COUNSEL: Well, it tells you what the goal is, which is splitting the red color band, as you said, but it doesn't tell you how to make a display system and filtering system to do that, does it?
MR. TANNAS: No, it does not. And I don't think it has to. One skilled in the trade, as defined by the court[], could pick this up and do it, I believe firmly.

TR 1353.

Therefore, the court has determined that it would have been obvious to one of ordinary skill in the art, in 1985, to combine the prior art to achieve the claimed invention. As Dr. Task explained, one skilled in the art, in 1985, would first study various known technologies for creating a full color display. *See* DE 500 ¶¶ 100-72. This analysis would lead to the understanding that CRTs or LCDs, as disclosed in UCHIDA and STOLOV, could be used in cockpits. Then, one skilled in the art would apply complementary filtering, as described in various prior art references, including VERNEY and the GERMAN PATENT. *Id.*; *see also* DE 511 at GVT009-0782 ("Perhaps an approach to retain color CRTs while using NVGs might be to block some of the infrared emissions similar to the approach used in the caution and warning lights [(complementary filtering)]."). In addition, the appropriate filters selected would make complementary filtering work with the displays being studied, to produce the desired full color display. *See* DE 500 ¶¶ 100-72; *see also* TR 1352-54 (Tannas). Moreover, the court also rejects Honeywell's argument that the Government and Defendant-Intervenors improperly used a spectral analysis with an incandescent bulb, instead

of a full color display. As Mr. Tannas testified, selecting appropriate filters "would depend heavily on the light source -- where the energy was in the light source," and "[o]ne skilled in the trade, as defined by the courts, could pick this up and do it." TR 1352-54. In addition, the court rejects Honeywell's contention that the prior art does not support splitting the red color band, when considering the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art[.]" *KSR*, 127 S. Ct. 1740-41. Again, as Mr. Tannas testified:

GOVERNMENT COUNSEL: And so one of ordinary skill in the art would then look for other filters if they wanted to make that display compatible with goggles and still retain the full color. Wouldn't they?
MR. TANNAS: *I don't know what goes in the mind of an inventor.*
GOVERNMENT COUNSEL: Well, Mr. Tannas --
MR. TANNAS: It's not obvious that it could even be achieved. So there's quite a few summary statements by quite a few of the references that suggest that to get full color display compatibility with a night-vision goggle, you should turn off the red, cover up the red, turn down the red. There's no suggestion at any place *in the literature* that you could possibly share the red and have enough red to keep and maintain a full color display, while at the same time being compatible with the goggle. So that is the genius[ness] of the invention.
TR 1150 (emphasis added).

In this case, the prior art described specific design issues and limitations in cockpits. The prior art, however, did not specifically address NVG compatibility with a full color display like the '914 patent. *See* DMX 4 at D000597 ("American experiments (ref. 9) have shown that blue/green illuminated cockpit is not as easy to detect as an incandescently or red illuminated cockpit."); *see also* DE 506 at GVT009-0472 ("The desired night flying configuration was for the pilot to wear the [NVGs] for piloting the aircraft while the copilot did not wear goggles so that he could monitor the aircraft instruments[ ]"); DE 511 at GVT009-0773 (indicating that the research was for warning lights and not a full color display); DE 514 at GVT018-1663 (stating that it may be "tough to achieve sunlight viewability" using a LCD, without mention of NVG compatibility as an implementation issue).

The court is cognizant that often "market demand, rather than scientific literature, will drive design trends." *See KSR*, 127 S. Ct. at 1741. In this case, BOEHM demonstrates that "market demands," in fact, may have influenced the military not to use red in the cockpit, even though it was scientifically possible. *See* DMX 4 at D000597. As BOEHM disclosed:

> *A brightly-lit cockpit is to be avoided in military applications.* A foe can detect a brightly illuminated helicopter very well with and without NVG. American experiments (ref. 9) have shown that blue/green illuminated cockpit is not as easy

> to detect as an incandescently or red illuminated cockpit.

DMX 4 at D000597 (emphasis added); *see also* TR 1375 (Tannas) ("[Y]ou may be seen by your adversaries, so you want to keep all the red down if only for that purpose, to be clandestine."). Therefore one skilled in the relevant art, in 1985, who was aware of BOEHM, but not constrained by the unique requirements of the military, may have been "prompted" to "combine the elements in the way [claim 2] does." *See KSR*, 127 S. Ct. at 1741 ("[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."); *but see* TR 361 (Reetz) ("[T]he jet air crews had a different opinion than the helicopter air crews about the elimination of red, and their conclusion was we needed to keep red.").

By the mid-1980's, however, there was a clear demand by the military for a full color display in aircraft. *See* DE 511 at GVT009-0782 ("[*F*]*uture* aircraft will most likely make use of CRT's while having to emit light that is compatible with NVGs.") (emphasis added). This demand was the driving incentive for the development of NVG-compatible full color displays. In addition, the record evidences that it would be obvious for one skilled in the art, in 1985, to combine the prior art in the ordinary course. As VERNEY recognized:

> LHX and future aircraft will most likely make use of CRT's while having to emit light that is compatible with NVGs. In

> examining the emitted spectrum of a CRT it is noted that the spectral content consists of narrow band emissions. Preliminary tests show that the NVGs can tolerate narrow band emissions for all colors of light. Perhaps an approach to retain color CRTs while using NVGs might be to block some of the infrared emissions similar to the approach used in the caution and warning lights. A second approach may be to disable the red . . . [o]ther areas include plasma displays, LED matrices, liquid crystal and micro-encapsulate electroluminescence.

DE 511 at GVT009-0782.

Likewise, LLOYD disclosed that "[t]he only feasible solution to this problem is to use the complementary filter lighting system[.]" DE 521 at GVT008-1983. Although the prior art identifies options different from claim 2, complementary filtering was well known in 1985 and one skilled in the art logically would explore complementary filtering to make full color displays NVG compatible. *See KSR*, 127 S. Ct. at 1742 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, . . . the fact that a combination was obvious to try might show that it was obvious under § 103."); *see also Ortho-McNeil Pharm., Inc.* v. *Mylan Lab., Inc.*, 2008 WL 834402, at *4 (Fed. Cir. March 31, 2008) ("[KSR's design need] posits a situation with a finite, and in the context of the art, small or easily traversed, number of options that would convince an ordinarily skilled artisan of

obviousness."). Therefore, Dr. Task testified that once LCDs were integrated into cockpits, inventors were able to apply complementary filtering to make them NVG compatible. *See* DE 500 ¶ 205 ("When LCD displays were deemed daylight readable and functional for cockpit use, the same logic was applied to place an NVIS filter to reduce the longer wavelengths of red and infra-red that interfered with the NVGs.").

Because complementary filtering was a known technique, in 1985, that could be used to filter any type of display (*see, e.g.* DE 505) it would have been obvious to apply this technique to allow the use of red in the cockpit. *See KSR*, 127 S. Ct. at 1740 ("[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. . . . [A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions."). Consequently, applying complementary filtering to address red light compatibility with NVGs was predictable, in 1985, and not a genuine innovation. *See Astrazeneca AB* v. *Mylan Labs., Inc.* (*In re Omeprazole Patent Litig.*), 490 F. Supp. 2d 381, 534 (S.D.N.Y. 2007) ("Here, by contrast, there were 'thousands and thousands of permutations and paths' facing a person of ordinary skill trying to formulate omeprazole. . . . The Patents are genuine innovations, not predictable upgrades."). The decision to use NVGs in fixed-wing aircraft created a market that would incentivize one of ordinary skill in

the art to use complementary filtering to filter the red color band. *See* TR 361-62 (Reetz) ("[T]he F-18 program office came back to the tri-service community and said, can you rewrite the specification to allow the use of red warning lights? And that's what we worked on, and we came to the conclusion, yeah, we could do that, but in order to do that, you're going to have to give up goggle performance.").

For these reasons, the court has determined that, for one skilled in the art, in 1985, motivated by the development of LCDs in a fixed-wing aircraft cockpit and the military's need to make such displays compatible with NVGs, combining the prior art would have been obvious.

iii. Teaching Away.

A reference "may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994); *see also KSR*, 127 S. Ct. at 1740 ("The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious.") (citing *Adams*, 383 U.S. at 51-52).

Honeywell argues that prior to the issuance of the '914 patent there "was a belief that red light had to be eliminated to make the cockpit NVG compatible." Pl PT Op Def at 45 (citing PTX 834 ¶

417 ("A concept that pervaded the mindset of those working to solve the NVG compatibility problem was that red light cannot be tolerated in an NVG compatible cockpit."); *see also* Pl PT Op Def at 45 (citing six prior art references "teaching that red light is [not] compatible with NVGs") (citing PTX 834 ¶ 418; DE 146 at GVT019-1642; DE 301 at GVT018-1045; DE 324 at GVT012-2378; DE 524 at GVT008-0846; DE 506 at GVT009-0474; DMX 4 at D000597). Prior to 1985, the United States Army spent $52 million to eliminate red light from aircraft cockpits. *See* Pl PT Op Def at 46 (citing TR 194, 210 (Bradford) ("[R]ed lighting . . . was taken out of the aircraft so that it would meet the requirements to work well with the goggles."). As a result, the military issued MIL-L-85762, a specification that "effectively prohibited the use of red light and full color displays with NVGs." Pl PT Op Def at 46 (citing DE 146; PTX 12 (MIL-L-85762); DE 500 ¶ 40).

The Government and Defendant-Intervenors respond that the prior art references do not teach the removal of all red, but "simply the *reduction* of red." L-3 PT Def at 46 (emphasis in original); *see also* Gov't PT Def at 44 ("[T]he references Mr. Tannas cited do not stand for the proposition that all red light must be *eliminated* from the cockpit.") (emphasis in original). In addition, some of the prior art references cited by Mr. Tannas teach that red is "acceptable in a cockpit utilizing NVGs." L-3 PT Def at 46. Dr. Task commented further on this point at trial:

DR. TASK: No, I don't believe it teaches away []. This is another one of those places where Mr. Tannas

perhaps is confused with the desire to get rid of all of the nonessential red and infrared light in the cockpit. Remember, we understood that the cockpit itself is -- for general lighting was illuminated with red and there was no reason to have that general lighting red in the cockpit. So some of these references are referring to the red for general lighting, and quite often, in fact most of the time, the red was generated with incandescent bulbs that had considerable infrared light and that is what needed to be gotten rid of, the red in the infrared, reduced, of the general cockpit lighting, but there were a number of places in the prior art that indicated that a small amount of red was acceptable.

GOVERNMENT COUNSEL: Do you -- is it your understanding that these references, the prior art references taught one of skill in the art, taught one to remove red entirely?

DR. TASK: No, they do not state or suggest that you need to remove red entirely. In fact, in TASK AND GRIFFIN [I], which I think he does refer to here[.] . . .

GOVERNMENT COUNSEL: Are you referring to page 137, second bullet point?

DR. TASK: Yes, page 137 of his testimony and he references one statement that was made in TASK AND GRIFFIN [I] but there is another statement in TASK AND GRIFFIN [I] that came up earlier this week where the article specifically says what needs to be done to improve the filter over the display is to increase the amount of red light at 630 nanometers, which is well within the wavelength range of the red color band, and then to block more of the light from 650 nanometers, out to 900 nanometers, is what the article said. So this is teaching basically what you want to do in the '914 patent. You want to have more

light at the lower wavelength region of the color band and remove the upper part. So you want to reduce the red by reducing the longer wavelengths of red because they don't do you much good.

TR 1658-60.

In addition, prior art taught that NVGs can tolerate narrowband emissions from all colors of light. *See* L-3 PT Def at 46 (citing DE 511 at GVT009-0782 ("NVGs can tolerate narrow band emissions for all colors of light[.]")); *see also* Gov't PT Def at 45 (citing DE 511 at GVT009-0782); *see also id.* (citing DMX 4 at D000597 ("[A] small proportion . . . of yellow and red light is not that disturbing to the NVG.")). For this reason, Mr. Tannas also acknowledged that several prior art references that he cited suggested reducing red light. *See* TR 1268-99 (Tannas); *see also* TR 1169-70, 1294-1300.

The Government and Defendant-Intervenors explain that reducing red in the cockpit was an engineering "trade off" between night vision capability and cockpit lighting and that the issuance of the '914 patent did not change the necessity for this "trade off." *See* L-3 PT Def at 47 ("The '914 patent does not teach any method for increasing red in the cockpit while keeping NVG capability the same. The more a filter cuts off from the shorter wavelengths, the less the NVGs will have to amplify.") (citing TR 362-63 (Reetz); TR 147, 178-79 (Bradford); TR 1548-49, 1554 (Task)); *see also* Gov't PT Def at 44 ("These references would not 'discourage' one of skill in the art from seeking other engineering tradeoffs, such as allowing more red

light in the cockpit while sacrificing some goggle performance - this was a principle that was well-understood in 1985."). This "trade off" is the reason the military issued MIL-L-85762. *See* L-3 Def Reply at 7 ("The military decided that the best approach was to give helicopter pilots as much NVG sensitivity as possible, which meant they must eliminate longer, red wavelengths in the cockpit so that the NVG filter would allow more wavelengths from outside the cockpit without interference.") (citing TR 361 (Reetz) ("85762 was written primarily with helicopters in mind.")); *see also* Gov't PT Reply at 17 ("MIL-L-85762 set an initial tradeoff, based on a study of pilot preferences, that favored the performance of NVGs over more color in the cockpit."). Significantly, the principal invention of the '914 patent disclosed red cockpit lighting, but the record does not evidence "teaching away" by the '914 patent or that it excluded the use of red in a cockpit. *See* Gov't PT Reply at 17 (citing DE 57 at H03235).[33] Finally, the

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[33] Honeywell asserts that DE 57 is not relevant to the obviousness inquiry, because:

> The memo is an internal company memo, and there is no way to separate Mr. Cohen's independent thinking from what he learned from others. Moreover, as a confidential, nonpublic document authored by the inventor, it cannot be relied upon to prove knowledge of one of ordinary skill in the art or anything else relevant to the obviousness issue.

Pl PT Op Def at 88 (citing *In re Omeprazole Patent Lit.*, 490 F. Supp. 2d at 520 (concluding that certain documents were not prior art because "no party has presented any evidence that

Government states that the Army spent $52 million removing red *floodlighting* and warning lights from cockpits, which would have been necessary, irrespective of the '914 patent. *See* Gov't PT Reply at 18 (citing DE 500 ¶¶ 222-24 ("One must not confuse the teachings of the prior art that rightly advocated getting rid of the massive amounts of unnecessary red and infrared light that was used for general cockpit lighting with the teachings that small amounts of (desirable) red light in indicators and displays could be tolerated by the properly filtered NVGs.")). For these reasons, the court has determined that the prior art does not teach away from the '914 invention and the Government and Defendant-Intervenors have established by clear and convincing evidence that allowing the red color band in an aircraft cockpit was an engineering "trade-off."

> In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would

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[the documents] were accessible to the public prior to the critical date").

The court agrees that the Cohen memo (DE 57) is not "prior art." Nevertheless, it is relevant in the obviousness analysis. *See United States* v. *Abel*, 469 U.S. 45, 56 (1984) ("[T]here is no rule of evidence which provides that testimony admissible for one purpose and inadmissible for another purpose is thereby rendered inadmissible[.]"). For these reasons, the court admitted DE 57 into evidence.

> occur in the ordinary course without real innovation retards progress[.]

See KSR, 127 S. Ct. at 1741.

As Mr. Reetz testified:

MR. REETZ: [MIL-L-]85762 was written primarily with helicopters in mind, and we did not have any full color displays in helicopters at that time, so that was not a concern.
GOVERNMENT COUNSEL: At a later point, did the issue of red then present itself to the committee?
MR. REETZ: Yes, right about when 85762 was published. As I mentioned, we did the TA-7 test.
THE COURT: Tell me when that was published.
MR. REETZ: The 85762?
THE COURT: [Yes].
MR. REETZ: January of '86. As I mentioned before, we did the TA-7 tests in 1984, and they were successful, and that led to the conclusion that we could use night vision goggles in jet airplanes. Well, the jet air crews had a different opinion than the helicopter air crews about the elimination of red, and their conclusion was we needed to keep red. The primary concern was, again, in the jet, you had less time to react, and they relied on color differentiation more than the helicopter crews did. That's what they told us. So their opinion, and primarily, this was some of the F-18s now, their opinion is we need to keep red warning lights, and so the F-18 program office came back to the tri-service community and said, can you rewrite the specification to allow the use of red warning lights? And that's what we worked on, and we came to the conclusion, yeah, we

could do that, but in order to do that, you're going to have to give up goggle performance. The reason you have to give up goggle performance is you have to move the minus blue filter to a higher wavelength. When you move the minus blue filter to a higher wavelength, you lose goggle performance because you're eliminating, you're taking the goggle sensitivity curve and making it smaller, so you don't have as much sensitivity. The jet community said, I can live with that, I would rather have red and lose goggle performance. The helicopter people still were of the opinion, no, I don't want to lose goggle performance, and I don't need red. So version A of the spec, which eventually came out in 1988, I believe, gives air crew, airplane designers an option. They could either use it with what's called the class A night vision goggles, which had 625 minus blue filter, or we ended up coming up with a class B goggle, which had the 665 nanometer minus blue filter. So you had a choice, you could use the class A with no red, or you could use class B and have some red.

TR 361-63.

In addition, the Government and Defendant-Intervenors have established by clear and convincing evidence that the '914 patent did not eliminate the need to have a "trade-off" between allowing the red color band and NVG performance, nor does Honeywell claim otherwise.

Finally, the court has reviewed each of the six prior art references cited by Mr. Tannas,[34] and has determined that they do not demonstrate that the prior art "teaches away." TASK & GRIFFIN I does not teach away from claim 2. *See* TR 1658-60 (Task) ("[T]here is another statement in TASK AND GRIFFIN [I] that came up earlier this week where the article specifically says what needs to be done to improve the filter over the display is to increase the amount of red light at 630 nanometers[.]"). Moreover, Mr. Tannas relies on references that refer to floodlighting and other warning lights in cockpits that are different from the "small amounts of (desirable) red light in indicators and displays [that] could be tolerated by the properly filtered NVGs." DE 500 ¶¶ 222-24; *see also* DE 324 at GVT012-2378 ("[C]onventional cockpit lighting, which is rich in red and near IR radiation, tends to overload the NVG[.]"); DE 146 at GVT019-1643 ("[W]henever the ANVIS is exposed to cockpit lighting that is *too* intense between 600 and 900 [nm] . . . the ANVIS becomes *less* sensitive to the radiance of the outside scene[.]") (emphasis added); DE 524 at GVT008-0847 ("The F/A-18 production *warning, caution, and advisory lights* are not compatible with the NVG systems[.]") (emphasis added); DMX 4 at D000597 ("American experiments [] have shown that blue/green illuminated cockpit is not as easy to detect as an incandescently or red illuminated cockpit."). Collectively, these prior art references

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[34] *See* DMX 4, DE 146, DE 301, DE 324, DE 506, and DE 524. The court has determined that the REETZ THESIS (DE 301), is not prior art.

establish that engineering and design "trade-offs" were necessary and that a full color display, under certain circumstances, could be used in a NVG compatible cockpit. Accordingly, the court has determined that these "known disadvantages . . . would [not] naturally discourage the search for new inventions" like the '914 patent. *See Adams*, 383 U.S. at 52.

e. Secondary Considerations.

The final step in the *Graham* analysis requires the court to take into account "secondary considerations." *See Graham*, 383 U.S. at 17-18.

i. Governing Precedent.

The United States Supreme Court has determined that:

> secondary considerations [such] as commercial success, long felt but unsolved needs, failure of others, etc., *might be* utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries *may have* relevancy.

Graham, 383 U.S. at 17-18 (emphasis added).

Some courts have determined that secondary considerations "only need be considered in close cases." *Med. Lab. Automation, Inc.* v. *Labcon, Inc.*, 670 F.2d 671, 675 (7th Cir. 1981); *see also Kaiser*

Indus. Corp. v. *McLouth Steel Corp.*, 400 F.2d 36, 41 (6th Cir. 1968), *cert. denied*, 393 U.S. 1119 (1969). The United States Court of Appeals for the Federal Circuit, however, has stated that:

> It is jurisprudentially inappropriate to disregard any relevant evidence on any issue in any case, patent cases included. Thus evidence rising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness. Indeed, evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not. It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.

Stratoflex, Inc. v. *Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983) (citations omitted); *but see Pfizer, Inc.* v. *Apotex, Inc.*, 480 F.3d 1348, 1372 (Fed. Cir. 2007) ("Although secondary considerations must be taken into account, they do not necessarily control the obviousness conclusion."). Although our appellate court has considered secondary considerations as a separate substantive inquiry, as a matter of trial practice, this analysis typically arises as rebuttal to a *prima facie* finding of obviousness. *See KSR*, 127 S. Ct. at 1745 ("'Teleflex has shown no secondary factors to *dislodge* the determination that claim 4 is obvious.") (emphasis added); *see also Alza Corp.* v.

Mylan Labs. Inc., 464 F.3d 1286, 1293 (Fed. Cir. 2006) (concluding that the appellee "had established a strong *prima facie* case of obviousness, which [appellant] had failed to rebut through secondary considerations.").

As Professor Kitch has observed:

> [Secondary considerations] involve four inferences. First, that the commercial success is due to the innovation. Second, that if an improvement has in fact become commercially successful, it is likely that this potential commercial success was perceived before its development. Third, the potential commercial success having been perceived, it is likely that efforts were made to develop the improvement. Fourth, the efforts having been made by men of skill in the art, they failed because the patentee was the first to reduce his development to practice. Since men of skill in the art tried but failed, the improvement is clearly non-obvious.

E. Kitch, *Graham* v. *John Deere Co.: New Standards for Patents*, 1966 SUP. CT. REV. 293, 330-35 (1966).

The Government, however, argues that "if a court determines from the three step *Graham* framework that a claimed invention would have been obvious, 'secondary considerations cannot fill the gap.'" Gov't PT Def at 46 (quoting *Fromson* v. *Advance Offset Plate, Inc.*, 755 F.2d 1549 (Fed. Cir. 1985)). This argument, however, misstates the law. In *Fromson*, our appellate court stated that:

> Objective evidence ("secondary considerations"), such as commercial success due to the merits of the invention, must when present be considered as part of the obviousness equation. The district court erred here in reaching a conclusion on obviousness before considering the evidence of secondary considerations, and in then evaluating the latter solely on its "gap filling" capacity.

Id. at 1557.

ii. "Long Felt Need."

Honeywell argues that red light had been used in military cockpits for 40 years prior to 1985. *See* Pl PT Op Def at 73 (citing TR 85 (Reetz)) ("[F]or the last 40 years, we had red in the cockpit in terms of warning lights[.]"); PTX 833 ¶ 56 ("Red has been in the cockpit for many decades."); PTX 833 ¶ 56 ("[R]ed has always been perceived as the color that denotes danger[.]")). Therefore, red is used in cockpit warning lights, is also used for full color maps, and is not diminished when NVGs are used in the cockpit. *See* Pl PT Op Def at 74 (citing DE 61 at 62 (SCOUGHTON); PTX 833 ¶ 55). For these reasons, "the prior art . . . demonstrates a desire for full color NVG compatible displays in military aircraft cockpits."[35] Pl PT Op Def

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[35] Honeywell makes this argument under the heading: "The Prior Art Evidences A Desire For NVG Compatible Full Color Displays, But Proposes No Solution For Achieving Both Simultaneously." Pl PT Op Def at 74. This is not a factor discussed in *Graham* and Honeywell cite no authority for the use of this factor. *See Graham*, 383 U.S. at 17-18. Therefore, the

at 75. Honeywell concedes, however, that BOEHM, VERNEY, BREITMAIER, and the REETZ THESIS[36] discuss "full color displays in the context of NVG compatibility, but [fail] to propose any definitive solution for enabling that goal to be achieved." Pl PT Op Def at 75. The Government and Defendant-Intervenors counter that there was no "long felt need" for full color displays, because of the issue of daylight readability. *See* L-3 PT Def at 49-50 ("[T]here was no long standing problem of making NVGs compatible with full color displays in existing cockpits."); *see also* Gov't PT Def at 47 ("The record is clear that as of 1985, full color displays had yet to be widely implemented in aircraft cockpits." (citing TR 361 (Reetz); TR 978 (Lawrence))).

The record evidences that, as of 1985, full color displays had not been implemented in military cockpits. *See, e.g.*, TR 361 (Reetz) ("[W]e did not have any full color displays in helicopters at that time, so that was not a concern."). A significant reason was that there were engineering and design "trade-offs" that limited the teaching of the prior art. *See* DMX 4 at D000597 ("American experiments [] have shown that blue/green illuminated cockpit is not as easy to detect as an incandescently or red illuminated cockpit."); *see also* TR 1549 (Task) (testifying that there were "other forces at play" that caused engineers to choose the sensitivity of NVGs over

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court has considered this argument more properly viewed as a "long felt need."

[36] The court has determined that the REETZ THESIS is not prior art.

color in the cockpit). Floodlighting and other warning lights in cockpits, however, were distinct from the "small amounts of (desirable) red light in indicators and displays [that] could be tolerated by properly filtered NVGs." DE 500 ¶¶ 222-24. For these reasons, the court has determined that Plaintiffs' failed to establish that, in 1985, there was a "long felt need" for a NVG compatible full color display.

iii. "Failure Of Others."

Honeywell also argues that the MIL-L-85762 specification establishes that the "failure of others" gave rise to the solution of the '914 patent. *See* Pl Pt Op Def at 75-82. The court has determined, however, that the MIL-L-85767 specification represented an engineering "trade-off" and did not "teach away" from the '914 patent, nor was it the result of the "failure of others." *See* Section II.C.3.d.iii, *supra*; *see also* TR 361 (Reetz) ("[MIL-L-]85762 was written primarily with helicopters in mind, and we did not have any full color displays in helicopters at that time, so that was not a concern.").

iv. "Commercial Success."

In addition, Honeywell asserts that the court's *prima facie* determination that claim 2 was infringed, together with the testimony of Mr. Tannas and Ms. Davis, establish the '914 invention's "commercial success." *See* Pl PT Op Def at 82-83 (citing *Demaco Corp.* v. *F. Von Langsdorff Licensing, Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988), *cert. denied*, 488 U.S. 956 (1988) (a "*prima facie* case of nexus is generally made out when the patentee

shows both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent")); *see also J.T. Eaton & Co.* v. *Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997) ("When a patentee can demonstrate commercial success, usually shown by significant sales in a relevant market, and that the successful product is the invention disclosed and claimed in the patent, it is presumed that the commercial success is due to the patented invention."). Here, Honeywell relies on Mr. Tannas' testimony that "[t]here is a high demand for aircraft cockpit displays for military use that are both full color [including red] and NVG compatible." PTX 834 ¶ 266. In addition, Ms. Davis testified that there was a "demand for the benefits of the patented technology and [a] lack of alternative technologies for providing the same benefits." PTX 1351 ¶¶ 101-19. Accordingly, Honeywell concludes that the "prominence of the patented technology in marketing materials alone demonstrates a sufficient link between the patented invention and the commercial success." Pl PT Op Def at 85 (citing *Gambro Lundia AB* v. *Baxter Healthcare Corp.*, 110 F.3d 1573, 1579 (Fed. Cir. 1997) ("The prominence of the patented technology in Baxter's advertising creates an inference that links the Gambro invention to this success.").

The Defendant-Intervenors and Government reject any relationship between the claimed invention and commercial success. *See* L-3 PT Def at 51 (citing *Ormco Corp.* v. *Align Tech., Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006) ("[I]f the commercial success is due to an unclaimed feature of the device,

the commercial success is irrelevant."); *see also* Gov't PT Def at 48 (same). Instead, any "commercial success" achieved was due to the advance of daylight readable full color displays, not the '914 patent. *See* L-3 Def Reply at 46-47 (citing DE-500 ¶ 215 (Task); TR 238, 243-44 (Dunn); TR 368-72 (Reetz); TR 1005 (Lawrence)).

The record evidences that the invention in the '914 patent achieved commercial success. *See* DE 602 (demonstrating that Honeywell sold 1,269 CMFDs for approximately $58,090,403 and L-3 sold a combined total of more than 1000 CMDUs and RDUs that were "critical to the business of L-3"); *see also* ADELMAN, at 370 ("Courts have sometimes counted the sales of infringers, as well as those of the patentee, in order to determine whether an invention enjoyed commercial success."); CHISUM ON PATENTS § 5.05(2)(g), at 5-698 (2007) ("[S]ome court decisions give weight to the infringer's success and even to that of other members of the industry."). Therefore, the court has determined that Honeywell made a *prima facie* showing that the patented invention achieved commercial success. *See Demaco Corp.*, 851 F.2d at 1392 (requiring the patentee to show "both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent[.]").

The Government and Defendant-Intervenors, however, have presented rebuttal evidence that this commercial success was attributed to the development of daylight readable full color displays, not the '914 patent. *See* L-3 Def Reply at 46; *see also*

DE-500 ¶¶ 205-206; TR 262-63 (Dunn). Moreover, Honeywell failed to reconcile allegations of a "long felt" need for the '914 invention with the fact that the invention had no commercial success until 1993. *See* CHISUM ON PATENTS § 5.05(2)(a), at 5-662 (2007) ("Judge Hand thought evidence of commercial success important primarily as an adjunct to the test of long felt need.") (citing *Textile Mach. Works* v. *Louis Hirsch Textile Machines, Inc.*, 87 F.2d 702, 704 (2d Cir. 1937)).[37]

Moreover, the record does not support an inference that efforts were made to develop the invention described in claim 2 since full color displays were not widely used in aircraft cockpits in 1985. *See, e.g.*, DE-500 ¶ 215 (Task); TR 368-72 (Reetz); TR 238, 243-44 (Dunn); TR 1005 (Lawrence).

Assuming, *arguendo*, that Honeywell met the burden to establish "commercial success," that factor alone is not sufficient to render claim 2 of the '914 patent nonobvious. *See Merk & Co.* v. *Biocraft Lab., Inc.*, 874 F.2d 804, 809 n.* (Fed. Cir. 1989)

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[37] In fact, Honeywell's witness, Mr. John Donofrio, the former Vice President of Intellectual Property for Allied-Signal Technologies, Inc., the licensing entity for Allied-Signal Corp. (1996-2000) and General Counsel for Honeywell Aerospace (2000-2005), testified that after the issuance of the patent, no licences were purchased. *See* SA TR 217 ("L-3 COUNSEL: And the '914 patent was issued four years ago, no one has signed up in the intervening four years for a license for that patent, correct? MR. DONOFRIO: No, but no one will sign up while there is litigation pending. Everybody is going to sit on the sidelines and wait for the litigation. I mean, that's the logical thing to do.").

(determining that commercial success was not enough to demonstrate nonobviousness); *see also Textile Mach. Works*, 87 F.2d at 704 ("But [commercial success] is a dangerous test to apply, and will lead one astray unless jealously watched."). Therefore, Honeywell has failed to establish that the "commercial success" of claim 2 of the '914 patent makes it nonobvious.

* * *

After a review of all of the *Graham* factors, the court has determined that the Government and Defendant-Intervenors have established by clear and convincing evidence that claim 2 is obvious. Obviousness is also supported by the prosecution history of the '914 patent. In this case, the Patent Examiner did not have a translated version of the GERMAN PATENT during prosecution, although the GERMAN PATENT disclosed all but two elements of claim 2 and therefore was more relevant than much of the cited prior art. *See Lindemann*, 730 F.2d at 1459 ("[T]he clear and convincing standard may more easily be met when such non-considered art is more pertinent than the cited art[.]") (citations omitted). Accordingly, for all these reasons, the court has determined that claim 2 of the '914 patent is obvious.

4. Defenses Set Forth In The First Paragraph Section 112 Of The Patent Act.

In this case, the Government and Defendant-Intervenors assert that Honeywell failed to meet the

written description, enablement, or best mode requirements of Section 112 at the Patent Act. *See* Gov't PT Def at 54; *see also* L-3 PT Def at 56.

a. The Written Description Requirement.

The first paragraph of Section 112 of the Patent Act provides:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 U.S.C. § 112 ¶ 1.

The purpose of Section 112 is to increase the amount of public knowledge and information about the invention, so that it may be used to further research and innovation, even after the patent expires. As the United States Supreme Court observed in *Bonito Boats* v. *Thunder Craft Boats*, 489 U.S. 141 (1989):

> The federal patent system . . . embodies a carefully crafted bargain for encouraging the creation and disclosure of new, useful, and nonobvious advances in technology and

> design in return for the exclusive right to practice the invention for a period of years. [The inventor] may keep his invention secret and reap its fruits indefinitely. In consideration of its disclosure and the consequent benefit to the community, [a] patent is granted. An exclusive enjoyment is guaranteed [the inventor] for seventeen years, but upon expiration of that period, the knowledge of the invention inures to the people, who are thus enabled without restriction to practice it and profit by its use.

Id. at 150-51 (quotations and citation omitted).

The written description requirement of Section 112 requires that the specification fully disclose the invention. *See* 35 U.S.C. § 112 ¶ 1; *see also* Mark D. Janis, *On Courts Herding Cats: Contending with the "Written Description" Requirement (and Other Unruly Patent Disclosure Doctrines)*, 2 W[illegible]. U. J.L. & POL'Y 55, 59 (2000) ("The written description requirement purports to measure whether the written description in a patent disclosure 'reasonably convey[s] to one of skill in the art that the inventor possessed' the claimed subject matter.") (citation omitted).

Section 132 of the Patent Act also prohibits a new claim, amendment, or addition to the patent specification that introduces new matter after the filing date. *See* 35 U.S.C. ¶ 132 ("No amendment shall introduce new matter into the disclosure of the invention."). Therefore, to amend a patent claim, an inventor must demonstrate that the original patent

application contained the subject matter of the amendment. *See* 35 U.S.C. § 112 ¶ 1; *see also* ALDEMAN, *supra*, at 470 ("In other words, any claims amended after the filing date or new claims filed after the filing date must contain the same invention as the original disclosure."). As the predecessor to the United States Court of Appeals for the Federal Circuit explained in *In re Smith*, 481 F.2d 910 (C.C.P.A. 1973):

> Acknowledgment of [the written description] requirement evidences appreciation of an important purpose of § 112, first paragraph, which is the definition of the attributes which a patent specification must possess as of the filing date to be entitled to that filing date as a prima facie date of invention. Satisfaction of the description requirement insures that subject matter presented in the form of a claim subsequent to the filing date of the application was sufficiently disclosed at the time of filing so that the prima facie date of invention can fairly be held to be the filing date of the application.

Id. at 914; *see also Vas-Cath, Inc.* v. *Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991) ("Adequate description of the invention guards against the inventor's overreaching by insisting that he recount his invention in such detail that his future claims can be determined to be encompassed within his original creation.") (quotation omitted).

Therefore, in determining, whether the '269 Application contains the same subject matter as

subsequent amendments, the court must determine whether "the inventor conveyed with reasonable clarity to those of skill in the art that he was in possession of the subject matter of the claims." *Union Oil Co.* v. *Atl. Richfield Co.*, 208 F.3d 989, 997 (Fed. Cir. 2000); *see also Koito Mfg. Co., Ltd.* v. *Turn-Key-Tech, LLC*, 381 F.3d 1142, 1154 (Fed. Cir. 2004) ("This Court . . . require[s] the patent specification to describe the claimed invention so that one skilled in the art can recognize what is claimed." (quotation and citation omitted)). "Reasonable clarity" requires "one skilled in the art, reading the original disclosure, *immediately* [to] *discern* the limitation at issue in the claims." *Purdue Pharma L.P.* v. *Faulding Inc.*, 230 F.3d 1320, 1323 (Fed. Cir. 2000) (citations and quotations omitted) (emphasis added). In conducting this inquiry, the trial court must only consider what one skilled in the art would understand from the disclosure, not what would have been obvious.

As our appellate court observed in *Lockwood* v. *Am. Airlines*, 107 F.3d 1565, (Fed. Cir. 1997):

> It is the disclosures of the applications that count. Entitlement to a filing date does not extend to subject matter which is not disclosed, but would be obvious over what is expressly disclosed. It extends only to that which is disclosed. While the meaning of terms, phrases, or diagrams in a disclosure is to be explained or interpreted from the vantage point of one skilled in the art, all the limitations must appear in the specification. The question is not whether a

> claimed invention is an obvious variant of that which is disclosed in the specification. Rather, a prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought. . . . One shows that one is 'in possession' of the *invention* by describing the *invention*, with all its claimed limitations, not that which makes it obvious. One does that by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention. Although the exact terms need not be used *in haec verba*, the specification must contain an equivalent description of the claimed subject matter. A description which renders obvious the invention for which an earlier filing date is sought is not sufficient.

Id. at 1571-72 (emphasis in original) (quotations and citations omitted); *see also LizardTech, Inc.* v. *Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) ("[The specification] must describe the invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application, *i.e.*, that the patentee invented what is claimed.").

L-3 contends that claim 2 of the '914 patent requires a "system that filters a narrowband of the red color band from a single *multiband* source of light," and that the '269 Application prior to April 22, 1986, the date a Secrecy Order was imposed,

("original '269 Application") of the '914 patent did not describe filtering a narrowband of the red color band from this source of light. *See* L-3 PT Def at 58-59 (emphasis added). In addition, claim 2 of the '914 patent also requires a "local source of light having blue, red, and green color bands," that the court construed as "[a]n essential element of the local color display that must be perceptible to an observer . . . with a night vision aid." *Id.* at 58 (quoting *Honeywell II*, 66 Fed. Cl. at 447). Accordingly, claim 2 "encompasses . . . a single multiband source of light that provides all three color bands." *See* L-3 PT Def at 58 (citing DE 500 ¶ 68). Because claim 2 also requires "a third filter," passing "a narrow range of wavelengths within the red color band," the original '269 Application should have described a system that applies a filter to a multiband source of light. L-3 PT Def at 59 (quoting *Honeywell II*, 66 Fed. Cl. at 487). The specification, however, discloses three distinct monochromatic CRTs, not a single multiband source of light. *See* L-3 PT Def at 59-60 (citing DE 500 ¶ 65). In fact, if the bandpass filter disclosed therein were placed over a multiband source of light, the color display would be inoperative. *See* L-3 PT Def at 61 (citing TR 1605 (Task)). The original '269 Application also did not disclose a "plurality of filters at the local color display," because the "inventors were not in possession of a system that places the filters outside the display . . . and filters all three colors at the same time while maintaining a full color display[.]" L-3 PT Def at 62, 66.

The Government further argues that the disclosed display in the original '269 Application subsequently was broadened to include a "local color

display." *See* Gov't PT Def at 55 ("Though the scope of the '914 patent was expanded in several ways, one easily identifiable alteration is Honeywell's complete abandonment of the display envisioned by Mr. Cohen in 1985."). The original '269 Application disclosed a specific display and a defined structure; however, claim 2 of the '914 patent is defined by color output. *Id.* ("This is radically different than [the] original application, which was a display defined by its *structure*[.]") (emphasis in original). Moreover, the original '269 Application disclosed "an arrangement with three monochromatic [CRTs]," that were critical to the invention, because by "using separate cathode ray tubes . . . it is possible to more easily filter offending colors from reaching the ANVIS[.]" DMX 36 at DE-1046. The original '269 Application also disclosed that: "In accordance with the present invention, a full color local display which uses separate primary color light sources is made compatible with an ambient night vision (ANVIS) aid." DMX-36 at DE-1041. Therefore, one skilled in the art, in 1985, would conclude that the structure of the display of the '269 Application, including three separate CRT's and filters, was an essential element. *See* Gov't PT Def at 57 ("[T]he person of ordinary skill would have seen the numerous references by Mr. Cohen to the required structure of the display, and been led to believe that the structure was essential to the invention.").

Honeywell responds that the court should afford deference to the Patent Examiner's approval of the 2002 amendments. *See* Pl PT Op Def at 124 ("Indeed, as reflected in the '760 file history, the Examiner considered the amendments to the

specification and substitute drawings and expressly approved them.") (citing DMX 38 at D001702, 1706 (Notice of Allowability approving amendments to specification and drawings filed on January 23, 2002)). In this regard, Honeywell emphasizes that the original '269 Application "expressly states that other display configurations may be used." Pl PT Op Def at 126 (citing DMX 36 at D000011 ("While specific configurations of the local display 13 or 37 have been described, it is understood that the present invention can be applied to a wide variety of display and vision aid devices.")). Moreover, Honeywell argues that the display configuration is not essential to the invention. *See* Pl PT Op Def at 126. Therefore, one skilled in the art, in 1985, would determine that "'distinct monochromatic color generators' could include the distinct types of phosphors used in LCD backlighting." Pl PT Op Def at 127 (citing SA TR 1032-33 (Byrd)). Honeywell also contends that the Government's "color bands" argument regarding the arrangement of three monochromatic cathode ray tubes is in error, because that was a standard method of achieving a full color display, in 1985. *See* Pl PT Op Def at 128 (citing DE 500 at 3, 5, 33, DE-526-3; PTX 834 ¶ 512). Therefore, Honeywell concludes that "the three designated display systems could be found to infringe the '269 Application as originally filed." Pl PT Op Def at 129-30. Moreover, since claim 2 of the '914 patent does not specify a location for the plurality of filters, L-3's argument that they must be "outside the display" makes "no sense." *Id.*

The court declines to afford the Patent Examiner deference in determining whether the

original '269 Application was amended to introduce new material, since the issue of whether the '914 patent satisfied the written description requirement of Section 112 is an issue of fact and law, requiring the court to examine the entire record. *See* 35 U.S.C. § 282. Moreover, Honeywell's contention that the CRT display configuration is not essential to the original application is not credible. The original '269 Application clearly requires "a full color local display which uses *separate primary color light sources* [that] is made compatible with an ambient night vision (ANVIS) aid." DMX 36 at D000005 (emphasis added). For this reason, Dr. Task testified that the original '269 Application specifically relied on the "separate and distinct nature of the local source of light as it is composed of a plurality of monochromatic display transducers," and if the filters disclosed in the original '269 Application were placed over a multiband light source, the full color display would be inoperative. *See* DE 500 ¶ 68; TR 1605 (Task). Although Mr. Tannas testified that the three distinct monochromatic color generators are a local source of light, having blue, red, and green color bands (PTX 834 ¶ 501), the original '269 Application disclosed that:

> The technique of using three primary display colors to generate a full color image on a cathode ray tube allows a much greater time period for admitting light to the ANVIS 13 while still providing a high quality image to a local display 37 which uses a cathode ray tube.

DMX 36 at D000009.

The original '269 Application also stated that the "present invention can be applied to a wide variety of display and vision aid devices." The text, however, continued: "For example, the offending light which is blocked from admission to the ANVIS 13 may be interior ambient cockpit lighting, rather than the illumination of the display." DMX 36 at D000011. These words state that the inventor was contemplating other types of lighting, not other types of full color displays.[38] The court recognizes that "a claim need not be limited to a preferred embodiment." *Lampi Corp.* v. *Am. Prods., Inc.*, 228 F.3d 1365, 1378 (Fed. Cir. 2000). On the other hand, a written description requires more than "a mere statement that it is part of the invention[.]" *See Fiers* v. *Revel*, 984 F.2d 1164, 1170-71 (Fed. Cir. 1993) ("[O]ne cannot describe what one has not conceived."). The court considers Honeywell's argument that the original '269 Application was meant to be used with displays, other than CRTs, such a "mere statement." *See* Pl PT Op Def at 127 ("On the contrary, 'other display transducers' were expressly *contemplated*." (emphasis added)); *see also id.* ("In light of the express *reference* to CRTs and

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[38] The court also has considered whether ambient cockpit lighting could be a local source of light meeting the claim construction and determined that it is not, since Dr. Task testified that if the filters disclosed in the original '269 Application were used on a single source of light, the display would be inoperative. *See* TR 1605 (Task). In addition, neither the original '269 Application nor other evidence describes how the invention would filter ambient lighting in a way that it would meet the claim construction. *See Fiers*, 984 F.2d at 1170-71 (determining that a written description requires more than "a mere statement that it is part of the invention[.]").

'other display transducers,' particularly when coupled with the express *statement* that the invention is applicable to a 'wide variety of display devices,' Defendants' assertions that the claims are limited to the particular CRT embodiment of original Figure 3 lack any support in the record.") (emphasis added). The original '269 Application, however, contains no indication that the inventor conceived of the invention being used with any displays other than CRTs. *See* DMX 36 at D000005 ("a full color display which uses separate primary color light sources"); *see also id.* at D000019 (diagram).

Nevertheless, Honeywell argued that Mr. Byrd's testimony demonstrates that "'distinct monochromatic color generators' *could include* the distinct types of phosphors used in LCD backlights." *See* Pl PT Op Def at 127 (citing SA TR 1032-33 (Byrd)) (emphasis added). Mr. Byrd's testimony concerning the phosphors used in LCD backlights, however, indicated otherwise:

HONEYWELL COUNSEL: Mr. Byrd, are you familiar with fluorescent lamps that are used as back lights for liquid crystal displays in aircraft cockpits?
MR. BYRD: Yes.
HONEYWELL COUNSEL: And the lamps that are used as back lights contain distinct types of phosphors; is that correct?
MR. BYRD: Yes.
HONEYWELL COUNSEL: And each type of phosphor has a different chemical composition; is that right?
MR. BYRD: Generally, yes.

HONEYWELL COUNSEL: And the phosphors that are used in the fluorescent lamps that are used as back lights are coated as a solid powder on the inside of the fluorescent tube; is that right?
MR. BYRD: Generally, yes.
HONEYWELL COUNSEL: And each type of phosphor generates light when it is struck by a UV photon, that is emitted by the gas on the inside of the tube; is that right?
MR. BYRD: That's a reasonable description, yes.
HONEYWELL COUNSEL: And the phosphors generate the colors of the display; is that correct?
MR. BYRD: They generate the light of multiple colors, which then is emitted by the display. It is a reasonable summary.
HONEYWELL COUNSEL: And the light emitted by a single type of phosphor, such as the green phosphor, could be called monochromatic; is that right? [objection and ruling omitted]
MR. BYRD: Certainly it *could* be, yes, it *could* be. *Not that I would normally refer to it that way*, but it could be.
HONEYWELL COUNSEL: It would not be unreasonable, an unreasonable use of the term to call it monochromatic, would it?
MR. BYRD: Not unreasonable, *it might be unusual, it might be confusing to an engineer who has a different perception of what monochrome means.*

SA TR 1032-34 (emphasis added).

Therefore, the court has determined that Mr. Byrd's testimony does not demonstrate that "one skilled in the art, reading the original disclosure, [would] immediately discern the limitation at issue

in the claims." *See Purdue Pharma*, 230 F.3d at 1323 (quotations and citations omitted). Moreover, although Honeywell does not cite any portion of Mr. Tannas's several hundred pages of trial testimony, the court finds the following relevant to this inquiry:

GOVERNMENT COUNSEL: Let me ask you this: Do you understand that the written description inquiry is whether the inventor possessed the invention as of the filing date of the application?
MR. TANNAS: Yes.

TR 1251.

* * *

L-3 COUNSEL: Well, the patent doesn't state anything about how steep or sharp the filter has to be, does it?
MR. TANNAS: No, it does not. It just says split the red color band and divide it up between the night vision goggle and the viewer. So the [genius] of it comes into that hint -- that little clue that says there's going to be success here if you do this little trick. And sometimes these things really do boil down to just a little minutia but it's minutia that pushed the industry over so that they could make them fully compatible with full color displays.

TR 1352.

* * *

L-3 COUNSEL: The claim -- the patent doesn't say how steep the filter has to be, it doesn't specify filter, correct?
MR. TANNAS: No. I think it's up to the person implementing the concept to make it as steep as he needs to.
L-3 COUNSEL: It doesn't say how much gap there should be between a red right pass or block, correct?
MR. TANNAS: No. That would depend heavily on the light source -- where the energy was in the light source.
L-3 COUNSEL: And it doesn't say anything about where to draw the cutoff point in the red spectrum, correct?
MR. TANNAS: No, it doesn't. So now you have to go on designing the thing. So it really doesn't tell you how to design it.
L-3 COUNSEL: It doesn't tell you how to make the device that is the subject of the claims, does it?
MR. TANNAS: It tells you how to make it. It says split the red color band. *Now, the detail of implementing that is another step. And then after you do that, then you go to another step, divide the filters. And after you do that, you go into the laboratory and do some tests. There's quite a bit of work to do after this concept is put forward.*
L-3 COUNSEL: Well, it tells you what the goal is, which is splitting the red color band, as you said, but it doesn't tell you how to make a display system and filtering system to do that, does it?
MR. TANNAS: No, it does not. And I don't think it has to. One skilled in the trade, as defined by the courts, could pick this up and do it, I believe firmly.

TR 1353-54 (emphasis added).

The United States Court of Appeals for the Federal Circuit has held that "[w]hile the meaning of terms, phrases, or diagrams in a disclosure is to be explained or interpreted from the vantage point of one skilled in the art, all the limitations must appear in the specification. The question is not whether a claimed invention is an obvious variant of that which is disclosed in the specification." *Lockwood*, 107 F.3d at 1571-72 (citations and quotations omitted). To his credit, Mr. Tannas conceded that one skilled in the art, in 1985, would "have to go into the laboratory and do some tests." TR 1354 (Tannas). One skilled in the art, in 1985, "reading the original disclosure, [would not] immediately discern the limitation at issue in the claims." *See Purdue Pharma*, 230 F.3d at 1323 (quotations and citations omitted).

The Government and Defendant-Intervenors have established by clear and convincing evidence that the written description requirement was not met. Therefore, the court has determined that the written disclosure in the original '269 Application would not necessarily lead one skilled in the art, in 1985, to conclude that the original '269 Application contained the same subject matter as the amendments.

b. Enablement.

Section 112 of the Patent Act requires that a patent specification describe or enable "those skilled in the art to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc.* v. *Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d

1557, 1561 (Fed. Cir. 1993)). The purpose of this enablement requirement is to insure that the specification fully informs the public about the invention. *See Nat'l Recovery Techs. Inc.* v. *Magnetic Separation Sys. Inc.*, 166 F.3d 1190, 1195-96 (Fed. Cir. 1999) ("The enablement requirement ensures that the public knowledge is enriched by the patent specification to a degree at least commensurate with the scope of the claims."). To determine whether the invention is enabled, the court must consider what is disclosed in the specification, in addition to the scope of what would be known to one of ordinary skill in the art, in 1985, without "undue experimentation." *Genentech*, 108 F.3d at 1365; *see also In re Goodman*, 11 F.3d 1046, 1049-50 (Fed. Cir. 1993) ("[T]he specification must teach those of skill in the art how to make and how to use the invention as broadly as it is claimed.") (quotation omitted). Invalidity "for lack of enablement is a conclusion of law and must be supported by facts proved by clear and convincing evidence[.]" *Nat'l Recovery Techs.*, 166 F.3d at 1195 (quotation omitted).

L-3 argues that the '914 patent presents only a "mere germ" of an idea that one skilled in the art, in 1985, could not recreate without "undue experimentation." *See* L-3 PT Def at 68 ("When a patent's description does not disclose a starting point or the conditions under which an invention can be made, by definition, undue experimentation is required to practice the invention thus rendering it invalid due to lack of enablement.") (citing *Genentech*, 108 F.3d at 1366) ("Tossing out a mere germ of an idea does not constitute enabling disclosure.").

Honeywell responds that the evidence presented by L-3 does not meet the required clear and convincing standard. *See* Pl PT Op Def at 137 ("L-3 has no evidence, much less clear and convincing evidence, supporting its belatedly asserted enablement defense." (citing *Johns Hopkins University* v. *Cellpro, Inc.*, 152 F.3d 1342, 1359 (Fed. Cir. 1998) ("burden rested upon [defendant], who had to prove by clear and convincing evidence facts establishing a lack of enablement"))). In fact, Mr. Tannas's testimony, when viewed as a whole, confirms that one skilled in the art, in 1985, could make and use the full scope of the claimed invention. *See* Pl PT Op Def at 137 ("As L-3 acknowledges, Mr. Tannas's testified that '[o]ne skilled in the trade . . . could pick this [patent] up and do it,' *i.e.*, make a display system and filtering system to split the red color band." (citing TR 1354 (Tannas))).

Mr. Tannas, however, testified that:

> [The '914 patent] tells you how to make it. It says split the red color band. Now, the detail of implementing that is another step. And then after you do that, then you go to another step, divide the filters. And after you do that, *you go into the laboratory and do some tests. There's quite a bit of work to do after this concept is put forward.*

TR 1354 (emphasis added).

Therefore, the issue is whether the "tests" and "work," described by Mr. Tannas, constitute "undue experimentation." In that regard, the United States

Court of Appeals for the Federal Circuit has held that:

> The determination of what constitutes undue experimentation in a given case requires the application of a standard of reasonableness, having due regard for the nature of the invention and the state of the art. The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed[.]

In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988) (citations and quotations omitted).

Based on the testimony of Mr. Tannas and L-3's concession that "engineers quickly integrated NVGs by simply measuring the required wavelength cutoff needed and ordering the filters off the shelf," the court has determined that the required experimentation was not "undue." *See* L-3 PT Def at 12 (citing DE 500 at 93-94; TR 262-63 (Dunn); DE 57 H03235 (Cohen Memo)). Accordingly, the Government and Defendant-Intervenors failed to establish clear and convincing evidence that the '914 patent was not enabled.

c. Best Mode.

Section 112 of the Patent Act requires that the specification of a patent also set forth the "best mode

contemplated by the inventor of carrying out his invention." 35 U.S.C. § 112 ¶ 1. This requirement reflects the "statutory bargained-for-exchange by which a patentee obtains the right to exclude others from practicing the claimed invention for a certain time period, and the public receives knowledge of the preferred embodiments for practicing the claimed invention." *Eli Lilly & Co.* v. *Barr Labs.*, 251 F.3d 955, 963 (Fed. Cir. 2001) (citation omitted). Therein, the United States Court of Appeals for the Federal Circuit has established a two-prong inquiry for determining whether a patent specification complies with the best mode requirement:

> Our case law explicating the best mode requirement focuses on a two-prong inquiry. First, the factfinder must determine whether, at the time of filing the application, the inventor possessed a best mode for practicing the invention. Second, if the inventor possessed a best mode, the factfinder must determine whether the written description disclosed the best mode such that one reasonably skilled in the art could practice it. The first prong involves a subjective inquiry, focusing on the inventor's state of mind at the time of filing. The second prong involves an objective inquiry, focusing on the scope of the claimed invention and the level of skill in the art.

Eli Lilly & Co., 251 F.3d at 963 (citations omitted).[39]

L-3 argues that the inventor's subjective "best mode" in this case, is established by Mr. Cohen's deposition testimony:

DEFENDANT COUNSEL: What is [the drawing in figure 3] showing?
MR. COHEN: This is showing some sort of image source. It shows a general source that may have three -- the three different colors which could be pixels or could be three separate CRTs. As I had mentioned before, the way. . . a shadow mask gets color through individual pixels. A liquid crystal -- color liquid crystal has individual pixels for the color with individual colors on the pixel. Or you could have individual CRTs.

DE 54 at 439.

* * *

The original drawing was more specific than the text because the original drawing just showed like three

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[39] Whether a plaintiff can satisfy the "best mode" inquiry is a question of fact, requiring the defendant to establish non-compliance by clear and convincing evidence. *See N. Telecom, Ltd.* v. *Samsung Elecs. Co., Ltd.*, 215 F.3d 1281, 1286 (Fed. Cir. 2000) ("Compliance with the best mode requirement is a question of fact[.]); *see also Transco Prod. Inc.* v. *Performance Contracting Inc.*, 38 F.3d 551, 559-60 (Fed. Cir. 1994); *Chiron Corp.* v. *Genentech, Inc.*, 268 F. Supp.2d 1148, 1170-71 ("Because [an accused infringer] has a clear and convincing burden of proof at trial, [the] evidence must do more than simply raise some doubt regarding the best mode requirement." (citation omitted)).

CRTs, but it didn't have to be.
DEFENDANT COUNSEL: Okay. And that was your understanding in 1985?
MR. COHEN: Well, in 1985 I was looking at the liquid crystal as a color display. So, yes. And as a color display, that would be the way we would do it. In 1985 the picture was drawn as CRTs because CRTs were the predominant technology that existed at the time. But as I had previously testified, I had looked at liquid crystal and I felt that would be the right way to go. Now, the fact that the original drawing didn't show that possibility which was -- that was a shame. It should have. . . .
DEFENDANT COUNSEL: Okay. And it was your expectation at that time that LCD would eventually be used in cockpit displays, correct?
MR. COHEN: Yes.

DE 54 at 440-43.

Honeywell counters that, "[r]ead in its entirety, Mr. Cohen's testimony fails to support the first prong of the best mode inquiry, which 'is highly subjective and focuses on the inventor's state of mind as of the date of filing the application.'" Pl PT Op Def at 141 (quoting *Bayer AG* v. *Schein Pharm., Inc.*, 301 F.3d 1306, 1320 (Fed. Cir. 2002)). In addition, contemplating the use of LCDs does not necessarily render that use the best mode. *See* Pl PT Op Def at 142 ("On the contrary, Mr. Cohen testified that 'liquid crystal was in [his] mind, [b]ut it was not at the foremost of [his] mind because it . . . had not reached the preeminence it has now.'") (quoting DE 54 at 443 (Cohen Dep.)).

In this case, the inventor of the '914 patent, Mr. Cohen, testified that he considered "the CRT [] the preeminent technology at the time." DE 54 at 442-43 (Cohen Dep.). Therefore, Mr. Cohen disclosed what he considered to be the best mode for the invention. *See Eli Lilly*, 251 F.3d at 963 ("The first prong involves a subjective inquiry, focusing on the inventor's state of mind at the time of filing.").[40] Therefore, the court has determined that the Government and Defendant-Intervenors did not establish by clear and convincing evidence that the specification necessarily disclosed the best mode.

5. Definiteness Defense Set Forth In The Second Paragraph Of Section 112 Of The Patent Act.

Section 112 of the Patent Act requires that a patent specification include one or more claims, "particularly pointing out and distinctly claiming subject matter which the applicant regards as his invention." 35 U.S.C. § 112 ¶ 2. The United States Court of Appeals for the Federal Circuit has held that the standard for assessing whether a patent claim is sufficiently definite to satisfy Paragraph 2 of Section 112 is "whether one skilled in the art would understand the bounds of the claim when read in light of the specification." *Miles Labs., Inc.* v. *Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993). Therefore, trial courts have been instructed:

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[40] The court could not find any case law holding that the best mode must be the most technologically advanced mode.

In determining whether that standard is met, *i.e.*, whether the claims at issue [are] sufficiently precise to permit a potential competitor to determine whether or not he is infringing, we have not held that a claim is indefinite merely because it poses a difficult issue of claim construction. We engage in claim construction every day, and cases frequently present close questions of claim construction on which expert witnesses, trial courts, and even the judges of this court may disagree. Under a broad concept of indefiniteness, all but the clearest claim construction issues could be regarded as giving rise to invalidating indefiniteness in the claims at issue. But we have not adopted that approach to the law of indefiniteness. We have not insisted that claims be plain on their face in order to avoid condemnation for indefiniteness; rather, what we have asked is that the claims be amenable to construction, however difficult that task may be. If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds. By finding claims indefinite only if reasonable efforts at claim construction prove futile, we accord respect to the statutory presumption of patent validity,

> and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.

Exxon Research & Eng'g Co. v. *United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001) (citations and quotations omitted).[41]

The Government and Defendant-Intervenors argue that the court's interpretation of "narrowband of the red color band" as "measurable" or "perceptible" does not allow one skilled in the art to understand the scope of the claim, when read in light of the specification. *See* Gov't PT Def at 59 ("Specifically, the claim limitation 'narrowband of the red color band,' interpreted to require only that light within the range of 620 to 780 nm be 'measurable' or 'perceptible,' is indefinite."); *see also* L-3 PT Def at 75 ("[T]he '914 patent provides no guidance as to the level of light that is considered measurable, nor is that term understood by a person skilled in the art." (citing DE-500 ¶ 82)).

Honeywell responds that "[a] claim can be found indefinite only if it [is] so insolubly ambiguous that it cannot be construed." Pl PT Op Def at 131 (citing *Energizer Holdings* v. *ITC*, 435 F.3d 1366, 1371 (Fed. Cir. 2006) ("A claim that is amenable to construction is not invalid on the ground of

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[41] The "determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Personalized Media Communications, L.L.C.* v. *Int'l Trade Comm'n*, 161 F.3d 696, 702 (Fed. Cir. 1998).

indefiniteness.")). Moreover, Honeywell observes that the Government "advocated the very constructions that were adopted by the Court." *See* Pl PT Op Def at 134-35. Therefore, the Government and Defendant-Intervenors should be estopped from arguing indefiniteness at this stage of the proceedings. *See* Pl PT Op Def at 135.

The United States Court of Appeals for the Federal Circuit has held that: "A claim that is amenable to construction is not invalid on the ground of indefiniteness." *Energizer Holdings*, 435 F.3d at 1371. In this case, the court has construed all the claims of the '914 patent requested by the parties and determined that the '914 patent is not indefinite. *See Honeywell II*, 66 Fed. Cl. at 400; *see also Exxon Research*, 265 F.3d at 1375 ("If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.").

6. The "First Sale" Doctrine.

Section 271(a) of the Patent Act provides: "Except as otherwise provided in this title, . . . whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefore, infringes the patent." 35 U.S.C. § 271(a). Authorization may occur upon the sale of a patent, without condition. *See Intel Corp.* v. *ULSI Sys. Tech*, 995 F.2d 1566, 1568 (Fed. Cir. 1993) ("The law is well settled that an authorized sale of a patented

product places that product beyond the reach of the patent.") (citing *Bloomer* v. *Millinger*, 68 U.S. 340, 350-51 (1864)); *see also Adams* v. *Burke*, 84 U.S. 453, 456 (1873) ("[I]n the essential nature of things, when the patentee, or the person having his rights, sells a machine or instrument whose sole value is in its use, he receives the consideration for its use and he parts with the right to restrict that use. The article . . . passes without the limit of the monopoly.").

The Government argues that, even if the '914 patent is valid, Honeywell should not be able to recover damages from the sale of CMFDs, because the infringing CMFDs were sold to the Government under an implied license. *See* Gov't PT Def at 61.[42] Honeywell counters that the "First Sale" Doctrine is inapplicable, because Honeywell had no rights under the '914 patent when the Government purchased the CMFDs. *See* Pl PT Op Def at 150. The sale of a patented invention "by someone other than the patentee or his licensee does not give rise to an implied license." Pl PT Op Def at 150-51 (citing *Boesch* v. *Graff*, 133 U.S. 697, 703 (1890) ("purchasers from [licensee in Germany were not] authorized to sell the articles in the United States in defiance of the rights of patentees under a United States patent")).[43]

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[42] The Government argues the "First Sale" Doctrine and legal estoppel defenses under the heading "Implied License." *See* Gov't PT Def at 61-63.

[43] *See Dekalb Genetics Corp.* v. *Pioneer Hi-Bred Int'l, Inc.*, 2001 WL 92118, *9 (N.D. Ill. Jan. 30, 2001) (unpublished) ("since Monsanto was not the owner of the '956 patent at the time the license was granted . . . [plaintiff's] patent rights

The alleged infringing CMFDs were sold to the Government, prior to Honeywell Inc.'s merger with Allied Signal in 1999. *See* 8/1/05 TR 98-99 (Yeadon) (Allied Signal owned the '269 Application from 1995 until the December 1999 merger with Honeywell). The surviving entity of Honeywell's merger with Allied Signal is Honeywell International Inc., a Delaware Corporation:

> When any merger or consolidation shall have become effective . . . the constituent corporations shall become a new corporation, or be merged into 1 of such corporations . . . possessing all the rights, privileges, powers and franchises as well of a public as of a private nature, and being subject to all the restrictions, disabilities and duties of each of such corporations so merged or consolidated[.]

Del. Code Ann. tit. 8, § 259. Accordingly, Honeywell International Inc. is subject to all of the "restrictions, disabilities and duties" of Honeywell Inc. *See* Del. Code Ann. tit. 8, § 259; *see also Fitzsimmons* v. *Western Airlines, Inc.*, 290 A.2d 682, 685 (Del. Ch. 1972) ("It is thus a matter of statutory law that a Delaware corporation may not avoid its contractual

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cannot be exhausted through any license between Monsanto and [defendant]"); *Sanofi S.A.* v. *Med-Tec Veterinarian Products, Inc.*, No. Civ. A. 83-2198, 1983 WL 417 at *6 (D. Kan. Sept. 16, 1983) (unpublished) (holding that acquiring the patented product from the subsidiary of the patent holder in the normal course of business is not sufficient to grant an implied license).

obligations by merger; those duties 'attach' to the surviving corporation and may be 'enforced against it.'").

Honeywell contends "that the sale of a patented product *by someone other than* the patentee or his licensee does not give rise to an implied license." Pl PT Op Def at 150 (emphasis added). The patentee and the seller of the patented product, however, are now the same corporate entity. *See* Del. Code Ann. tit. 8, § 259 ("the constituent corporations shall become a new corporation, or be merged into 1 of such corporations"). Therefore, Honeywell International Inc. is bound by the same "restrictions, disabilities and duties" created by the "First Sale" Doctrine, as that of Honeywell Inc. *See Adams*, 84 U.S. at 456 ("[W]hen the patentee, or the person having his rights, sells a machine or instrument whose sole value is in its use, he receives the consideration for its use and he parts with the right to restrict that use.").

The "First Sale" Doctrine recognizes the bargained for exchange that took place: "the patentee or his assignee having in the act of sale received all the royalty or consideration which he claims for the use of his invention in that particular machine or instrument, it is open to the use of the purchaser without further restriction on account of the monopoly of the patentees." *Burke*, 84 U.S. at 456; *see also Jazz Photo Corp.* v. *Int'l Trade Comm'n*, 264 F.3d 1094, 1102 (Fed. Cir. 2001) ("[P]atented articles when sold 'become the private individual property of the purchasers, and are no longer specifically protected by the patent laws.'") (quoting *Mitchell* v.

Hawley, 83 U.S. 544, 548 (1873)). Here, if Honeywell International Inc. were to recover damages for infringement, the court would be granting the double recovery that the "First Sale" Doctrine was designed to protect against. Accordingly, the court has determined that the "First Sale" Doctrine bars Honeywell from recovering damages from the Government for the use of the infringing CMFDs.

7. Inequitable Conduct.

To establish inequitable conduct, the court must find by clear and convincing evidence that the patent applicant breached the duty of candor and good faith, by failing to disclose material information to the PTO or submitting false material information, with an intent to deceive. *See Bruno Indep. Living Aids, Inc.* v. *Acorn Mobility Servs. Ltd.*, 394 F.3d 1348, 1351 (Fed. Cir. 2005) ("A breach of this duty may constitute inequitable conduct, which can arise from a failure to disclose information material to patentability, coupled with an intent to deceive or mislead the [examiner].") (citation omitted); *see also Monsanto Co.* v. *Bayer BioScience N.V.*, 363 F.3d 1235, 1239 (Fed. Cir. 2004) (determining that inequitable conduct can be found when the "applicant omitted or misrepresented material facts with the intention of misleading or deceiving the patent examiner[.]"). If materiality and intent are established, then the court "must balance the equities to determine whether the patentee has committed inequitable conduct that warrants holding the patent unenforceable." *Monsanto Co.*, 363 F.3d at 1239.

Materiality can be established by demonstrating that "'a reasonable examiner would have considered such [information] important in deciding whether to allow the parent application.'" *Digital Control Inc.* v. *Charles Mach. Works*, 437 F.3d 1309, 1314 (Fed. Cir. 2006) (quoting *Dayco Prods., Inc.* v. *Total Containment, Inc.*, 329 F.3d 1358, 1363 (Fed. Cir. 2003)). The United States Court of Appeals for the Federal Circuit requires trial courts to follow "the standard set forth in PTO Rule 56." *Purdue Pharma L.P.* v. *Endo Pharms., Inc.*, 438 F.3d 1123, 1129 (Fed. Cir. 2006) ("In evaluating materiality, this court has consistently referred to the standard set forth in PTO Rule 56.") (citation omitted). PTO Rule 56 states:

> information that is not cumulative to information already of record or being made of record in the application, and that
>
> (1) establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
>
> (2) . . . refutes, or is inconsistent with, a position the applicant takes in:
>
> (i) Opposing an argument of unpatentability relied on by the Office, or
>
> (ii) Asserting an argument of patentability.

37 C.F.R. § 1.56.

To establish intent, "the involved conduct, viewed in light of all the evidence, including evidence of good faith, must indicate sufficient culpability to require a finding of intent to deceive." *Digital Control Inc.*, 437 F.3d at 1319 (quotation omitted). Direct evidence of intent to deceive is not required and may be inferred from the surrounding circumstances. *See Critikon, Inc.* v. *Becton Dickinson Vascular Access*, 120 F.3d 1253, 1256 (Fed. Cir. 1997); *see also id.* ("[I]ntent may be inferred where a patent applicant knew, or should have known, that withheld information would be material to the PTO's consideration of the patent application.") (citation omitted); *Bruno Indep. Living Aids*, 394 F.3d at 1354 ("[An] inference of deceptive intent may fairly be drawn in the absence" of a "credible explanation for the non-disclosure.").

L-3 argues that on September 21, 2001, Honeywell misrepresented the inventorship of the '914 patent to the PTO and this misrepresentation was material. *See* L-3 PT Def at 76-77("Section 102(f) of the Patent Act states that a person shall be entitled to a patent unless 'he did not himself invent the subject matter sought to be patented,' 35 U.S.C. § 102(f)[.]").

On November 15, 2000, the Patent Examiner rejected all of the claims of the'269 Application based on double patenting in light of the co-pending '760 Application and the issued '637 patent. *See* L-3 PT Def at 78 (citing DMX 36 at D000154) ("The issue of priority under 35 U.S.C. 102(g) and possibly 35 U.S.C. 102(f) of this single invention must be resolved."). Based on the Patent Examiner's ruling,

Honeywell amended the '269 Application and argued that the inventions at issue were distinct. *Id.* at 79 (citing DMX 36 at D000440). The Patent Examiner, however, again rejected the '269 Application and '760 Application on the same grounds. *Id.* (citing DMX 36 at D000458). In response, Honeywell cancelled the '760 Application, and amended the '269 Application by adding two polarizing filters to that claim and Dr. Craig R. Scoughton's name as an inventor of these filters. *Id.* (citing DMX 36 at D000461-67). L-3 argues that these changes were material misrepresentations, because the '269 Application, as originally filed, did not name Dr. Scoughton as an inventor. *Id.* (citing DMX 37 at D000716, 712; DMX 36 at D000013). Moreover, the polarizer amendment was added solely to allow Dr. Scoughton to be added as a co-inventor. *Id.* ("Indeed, the claim limitation directed to circular polarizers remained in place only long enough to legitimately add Scoughton as an inventor, and was then immediately removed.") (citing DMX36 at D000487). L-3 also contends that Honeywell was motivated to make these misrepresentations, because any patent arising out of the '760 Application would not have expired on October 10, 2005, while a patent originating from the '269 Application would not expire until 2019. *Id.* at 81. Therefore, when cancelling the '760 Application, Honeywell added claims to the '269 Application regarding a system of temporal filtering that previously was rejected in 1987, as anticipated by U.S. Patent No. 4,209,691. This non-disclosure alone, would support a finding of inequitable conduct. *Id.* at 82-83 ("[U]nder Federal Circuit precedent, the failure to disclose the rejection would, in itself, support a finding of inequitable conduct, and is

therefore highly material and further evidence of intent.") (citing *McKesson Info. Solutions, Inc.* v. *Bridge Med., Inc.*, 487 F.3d 897, 924 (Fed. Cir. 2007) (affirming the district court's finding of inequitable conduct because the applicant did not properly disclose a prior decision by the PTO)).

Honeywell responds that Dr. Scoughton's name properly was added to the '269 Application, reviewed by the Patent Examiner. *See* Pl PT Op Def at 144-45. Moreover, L-3 has presented no evidence that this action amounted to inequitable conduct. *Id.* In addition, Honeywell contends that inequitable conduct must be pleaded with particularity, and L-3 never plead non-disclosure of U.S. Patent No. 4,209,691 as an affirmative defense. *Id.* at 145 ("Contrary to the requirement of RCFC 9(b), L-3 never pleaded this new theory of inequitable conduct, and it should be rejected for that reason alone."). There is no evidence that U.S. Patent No. 4,209,691 is material to the patentability of the '914 patent. *Id.* at 146. In fact, U.S. Patent No. 4,209,691 is not in the record before the court. *Id.* at 147 ("The Hunt reference is not included in L-3's Trial Exhibit L-3E-106 (Honeywell's internal file for '270 application), and that patent has not been offered or admitted in evidence. Therefore, L-3 cannot prove materiality without proffering a copy of the allegedly undisclosed prior art.").

Inequitable conduct must be plead with particularity. *See Central Admixture Pharmacy Services, Inc.* v. *Advanced Cardiac Solutions P.C.*, 482 F.3d 1347, 1356-57 (Fed. Cir. 2007) (affirming dismissal of inequitable conduct defense as lacking

"the requisite particularity"); *see also Ferguson Beauregard/Logic Controls, Division of Dover Res., Inc.* v. *Mega Sys., LLC*, 350 F.3d 1327, 1344 (Fed. Cir. 2003) ("[I]nequitable conduct, while a broader concept than fraud, must be pled with particularity."); RCFC 9(b). In this case, L-3 plead prosecution laches with particularity, but failed to identify the non-disclosure of U.S. Patent No. 4,209,691. *See* L-3 Am. Def at 2-3. Therefore, the court will not consider whether the non-disclosure of U.S. Patent No. 4,209,691 constitutes inequitable conduct.

Moreover, the court has determined that L-3 has not established by clear and convincing evidence that the addition of Dr. Scoughton as a co-inventor in the '269 Application alone amounted to inequitable conduct. L-3 relies solely on inferences drawn from the prosecution history of the '914 patent and offers no other evidence to show that correction of inventorship was an intentional and material misrepresentation. *See PerSeptive Biosystems, Inc.* v. *Pharmacia Biotech, Inc.*, 225 F.3d 1315, 1321 (Fed. Cir. 2000) ("[T]he intentional misrepresentations, omissions and half-truths to the PTO, made as a persistent course of conduct, are highly material. . . . [T]he intentional falsehoods and omissions found by the district court easily meet our oft-stated test for materiality.") (internal quotations omitted). Dr. Scoughton was added as an inventor in accordance with PTO procedures. *See* Pl PT Op Def at 144-45; *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 201.03 ("37 CFR 1.48(c) is directed at correcting the inventorship where the executed oath or declaration had correctly set forth the inventorship but due to

amendment of the claims to include previously unclaimed but disclosed subject matter, one or more inventors of the amended subject matter must be added to the current inventorship."). Therefore, the court has determined that L-3 failed to meet the clear and convincing evidence standard for establishing inequitable conduct.

8. Prosecution Laches.

The United States Court of Appeals for the Federal Circuit has held that "prosecution laches may render a patent unenforceable when it has issued only after an unreasonable and unexpected delay in prosecution." *Symbol Techs., Inc.* v. *Lemelson Med., Educ & Research Found., LP*, 422 F.3d 1378, 1385 (Fed. Cir. 2005) (citation omitted). In making this determination, the court should examine "the totality of the circumstances, including the prosecution history of all of a series of related patents and overall delay in issuing claims." *Id.* at 1386. Our appellate court, however, has not set "any firm guidelines for determining when such laches exist," leaving that determination to the trial court. *Id.* at 1385 (holding that there are "no strict time limitations for determining whether continued refiling of patent applications is a legitimate utilization of statutory provisions or an abuse of those provisions" and that "[t]he matter is to be decided as a matter of equity, subject to the discretion of a [trial] court before which the issue is raised"). Invoking an equitable defense, however, should only be done in "*egregious* cases of misuse of the statutory patent system." *Id.* (emphasis added).

L-3 argues that the 17-year delay in the issuance of the '914 patent supports a finding of prosecution laches, because Honeywell could have continued prosecuting the '269 Application to allowance, as they did in another application. *See* L-3 PT Def at 86. L-3 again raises the same issues as inequitable conduct defense argument, mainly that Honeywell did not prosecute the '269 Application in good faith by presenting previously rejected claims and cancelling claims that might have otherwise been allowed in favor of a claim that had been previously rejected. *Id.* at 86-87. Finally, L-3 argues that allowing Honeywell to patent the subject matter covered by claim 2 would 93 remove from the public domain technological advancements from the past 17 years in the field of night vision goggle compatible displays. *Id.* at 87.

Honeywell responds that the delay in issuance mainly was caused by the Secrecy Order. *See* Pl PT Op Def at 148. Honeywell also contends that it could not have continued prosecuting the '268 Application during the pendency of the Secrecy Order, because the Patent Office closed prosecution during that time. *Id.* (citing DMX 36 at D000132).

The court has determined that L-3 has failed to prove by clear and convincing evidence that the '914 patent was unenforceable due to prosecution laches. The prosecution history of the '914 patent indicates that the Patent Examiner closed the prosecution one year after the Secrecy Order, and thus any attempt by the applicant to continue prosecuting the patent would not have resulted in the patent issuing sooner. *See* DMX 36 at D000132

("This application is now in condition for allowance, and the prosecution is now closed. However, in view of the secrecy order issued April 20, 1987, under 35 U.S.C.§ 181, this application will be withheld from issue during such period as the national interest requires."); *see also* MANUAL OF PATENT EXAMINING PROCEDURE § 130 ("When a Secrecy Order case is in condition for allowance, a notice of allowability (Form D-10) is issued, thus closing the prosecution. Any amendments received thereafter are not entered or responded to until such time as the Secrecy Order is rescinded. At such time, amendments which are free from objection will be entered; otherwise they are denied entry."). The three-year delay after the Secrecy Order was lifted is not an "egregious case[] of misuse of the statutory patent system." *Symbol Techs., Inc.*, 422 F.3d at 1386 (holding that a 18 to 39 year delay was inequitable). Accordingly, the court has determined that L-3 has failed to establish by clear and convincing evidence that the patent should be unenforceable due to prosecution laches.

III. CONCLUSION.

For the aforementioned reasons, the court has determined that claim 2 of the '914 patent was obvious and failed to meet the written description requirement of Section 112 ¶ 1 of the Patent Act. In addition, Honeywell is barred from recovering damages from the Government under the "First Sale" Doctrine.

The parties will advise the court on or before May 1, 2008 whether further proceedings are necessary, prior to the court entering a judgment

that may be appealed to the United States Court of Appeals for the Federal Circuit.

IT IS SO ORDERED.

s/ Susan G. Braden
SUSAN G. BRADEN
Judge

Appendix E

NOTE: This disposition is nonprecedential.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

HONEYWELL INTERNATIONAL, INC., AND HONEYWELL INTELLECTUAL PROPERTIES, INC.,
Plaintiffs-Appellants,

v.

UNITED STATES,
Defendant-Appellee,

and

LOCKHEED MARTIN CORPORATION,
Defendant-Appellee,

and

L-3 COMMUNICATIONS CORPORATION,
Defendant-Appellee.

2008-5181

Appeal from the United States Court of Federal Claims in 02-CV-1909, Judge Susan G. Braden.

ON PETITION FOR PANEL REHEARING

Before MAYER, PROST, and MOORE, *Circuit Judges*.

PER CURIAM

O R D E R

Combined petitions for panel rehearing and rehearing en banc were filed by the appellees. A response was invited by the panel and filed by Honeywell International, Inc. That was followed by L-3 Communications Corporation's Motion for Leave to File a Reply in Support of its Petition for Rehearing.

IT IS ORDERED THAT:

(1) L-3's Motion for Leave to File a Reply in Support of its Petition for Rehearing is granted.
(2) Appellees' petitions for panel rehearing are granted for the limited purposes of revising portions of the discussion of the Invention Secrecy Act and to properly limit the scope of remand.
(3) The previous opinion in this appeal issued February 18, 2010 and reported at *Honeywell Int'l, Inc. v. U.S.*, 596 F.3d 800 (Fed. Cir. 2010) is withdrawn and replaced with the revised opinion accompanying this order.

The petitions for rehearing en banc will be circulated to the full court along with a copy of this order.

FOR THE COURT

May 25, 2010

/s/ Jan Horbaly
Jan Horbaly
Clerk

cc: Lawrence J. Gotts, Esq.
John W. Harbin, Esq.
Thomas J. Madden, Esq.
Christopher L. Crumbley, Esq.

Appendix F

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

HONEYWELL INTERNATIONAL, INC., AND HONEYWELL INTELLECTUAL PROPERTIES, INC.,
Plaintiffs-Appellants,

v.

UNITED STATES,
Defendant-Appellee,

and

LOCKHEED MARTIN CORPORATION,
Defendant-Appellee,

and

L-3 COMMUNICATIONS CORPORATION,
Defendant-Appellee.

2008-5181

June 10, 2010, Decided
June 10, 2010, Filed

Before RADER, Chief Judge, * NEWMAN, MAYER, LOURIE, BRYSON, GAJARSA, LINN, DYK, PROST, and MOORE, Circuit Judges.

* Randall R. Rader assumed [*2] the position of Chief Judge on June 1, 2010.

PER CURIAM.

ON PETITION FOR PANEL REHEARING AND REHEARING EN BANC

ORDER

Appellees' United States, Lockheed Martin Corporation, and L-3 Communications Corporation separately filed combined petitions for panel rehearing and rehearing en banc. A response was invited by the panel and filed by Appellants' Honeywell International, Inc., et al. The court granted leave to L-3 to file a reply in support of its combined petition.

On May 25, 2010, the court granted appellees' petitions for panel rehearing for the limited purposes of revising portions of the discussion of the Invention Secrecy Act and properly limiting the scope of remand. The court issued a revised opinion to accompany the order. Thereafter, the combined petitions, response, and reply were referred to the circuit judges who are authorized to request a poll whether to rehear the appeal en banc.

Upon consideration thereof,

IT IS ORDERED THAT:

(1) The petitions for rehearing en banc are denied.

(2) The mandate for the court will issue on June 17, 2010.

Date: June 10, 2010